

# A NEW INSTITUTIONAL ECONOMIC ANALYSIS OF POLICIES GOVERNING NON-TIMBER FOREST PRODUCTS AND AGROFORESTRY DEVELOPMENT IN CAMEROON



Divine Foundjem Tita



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A NEW INSTITUTIONAL ECONOMIC ANALYSIS OF POLICIES GOVERNING  
NON-TIMBER FOREST PRODUCTS AND AGROFORESTRY DEVELOPMENT IN  
CAMEROON

Thesis submitted in fulfilment of the requirements for the degree of  
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Illustration of the cover above from left to right: *Irvingia gabonensis*, *Gnetum spp*, *Cola spp*, *Ricinodendron heudelotii*. Below left: An agroforestry system with plantain and *Ricinodendron trees*; Right: a wild forest, another source of NTFP.

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# Table of Contents

Acknowledgements .....	vii
Table of Contents .....	xi
List of Abbreviations and Acronyms .....	xv
List of Tables.....	xvi
List of Figures .....	xviii
List of Photos .....	xix
Chapter .....	1
1 Introduction .....	1
Abstract .....	1
1.1 Background and definition of concepts .....	1
1.2 Problem statement.....	5
1.3 Main objectives and research questions .....	8
1.4 Thesis outline .....	9
Chapter .....	11
2 The Theoretical and Conceptual Framework to Understand Policies and Institutions	
Governing NTFP and AFTP .....	11
Abstract .....	11
2.1 Introduction.....	12
2.2 Defining institutions .....	12
2.3 NIE: framework for analysing economic performance.....	14
2.4 Levels of institutional analysis and links to research questions and objectives	17
2.5 Conceptual framework for analysing the institutional environment of the	
NTFP/AFTP value chain in Cameroon .....	21
2.5.1 The action domain-AFTP/NTFP value chain.....	22
2.5.2 Outcome of the interaction of actors, and institutions in the value chain ...	25
2.6 Unpacking the institutions governing access and trade in AFTP/NTFP .....	27
2.7 Summary of the theoretical and conceptual framework.....	29
Chapter .....	31
3 Study Area and Research Approach.....	31
Abstract .....	31
3.1 Geography of Cameroon and development indicators .....	32
3.2 The sampling process .....	33
3.3 Agro-ecological zones and climate .....	34
3.4 Selection and description of NTFP .....	35
3.4.1 Ricinodendron .....	35
3.4.2 Kolanuts.....	37
3.4.3 Gnetum .....	39
3.4.4 Irvingia (Bush Mango).....	40
3.5 Criteria for choosing case study subjects: regions, villages and respondents....	42
3.5.1 Choice of regions.....	42
3.5.2 Choice of respondents .....	45
3.5.3 Traders and markets .....	47
Chapter .....	48
4 Policy and Legal Frameworks Governing Trees: Incentives or Disincentives for	
Smallholder Tree Planting Decisions in Cameroon? .....	48
Abstract .....	48
4.1 Introduction.....	49
4.2 Conceptual framework for understanding farmers' tree planting decisions .....	51

4.3	Research method .....	55
4.4	Results.....	58
4.4.1	Analysis of policy statements .....	58
4.4.2	Legislation governing trees and other forest products in Cameroon .....	60
4.4.3	Laws and regulations related to land in Cameroon .....	61
4.5	Possible impact of current legislation on farmers' and traders' decisions: a theoretical analysis.....	62
4.6	Discussion.....	64
4.7	Conclusions and policy implications .....	65
4.8	Recommendation for further research and link to the next chapter.....	67
Chapter	.....	68
5	Can Properly Enforced Forestry Regulations Affect Farmers' Decisions to Plant Indigenous Fruits Trees? Insights from Cameroon .....	68
Abstract	.....	68
5.1	Introduction.....	69
5.2	Research framework and hypotheses .....	71
5.3	Policy instruments governing access and trade in tree and tree products.....	71
5.3.1	Agro-ecological, demographic and socio-economic diversity of NTFP farmers	73
5.4	Methodology.....	76
5.4.1	Sample and sample size .....	76
5.4.2	Questionnaire design.....	77
5.5	Analytical framework .....	80
5.5.1	Description of the logistic regression model.....	80
5.6	Results and discussions .....	82
5.6.1	Respondents awareness of existing legislation .....	82
5.6.2	Willingness to accept policy instruments and intentions to plant trees subject to permits .....	84
5.6.3	Analyses of agro-ecological and socio-economic factors affecting willingness to accept policy instruments (regression models) .....	85
5.7	Discussion and conclusions.....	89
Chapter	.....	92
6	Farmer Perceptions and Preferences about Land and Tree Tenure Security in Southern Cameroon.....	92
Abstract	.....	92
6.1	Introduction.....	93
6.2	Institutions governing land and NTFP resources in Cameroon .....	96
6.2.1	Institutions governing land.....	96
6.2.2	Institutions governing natural resources, specifically NTFP .....	97
6.3	The debate about formalisation and customary tenure as measures of secure tenure.....	98
6.3.1	The difference between possession and ownership of land .....	98
6.3.2	Measuring tenure security .....	100
6.4	Factors that may influence farmers' choices for formal or customary tenure security .....	101
6.4.1	Increasing population and the evolutionary land rights theory.....	101
6.4.2	Cultural and political/historical diversity .....	102
6.5	Data and description of questionnaire.....	104
6.5.1	Choice of sites and respondents .....	104

6.5.2	Data collection tools .....	105
6.6	Results and discussions.....	106
6.6.1	Method of obtaining land .....	106
6.6.2	Perception and proof of ownership of land.....	108
6.6.3	Farmers' attitudes towards and preferences for tenure security .....	110
6.7	Main source of exploitation of and specificity of rights to NTFP resources .....	113
6.7.1	Main sources of NTFP.....	113
6.7.2	Rights to NTFP on farmers' land .....	115
6.7.3	Relationship between the decision to plant trees and assurance and breadth of rights over the land .....	115
6.8	Conclusions.....	116
Chapter	.....	118
7	A Tale of Transaction Costs and Forest Law Compliance: Trade Permits for Non- Timber Forests Products in Cameroon.....	118
Abstract	.....	118
7.1	Introduction.....	119
7.2	Key actors in the demand and supply of permits in Cameroon .....	123
7.3	Analytical framework .....	124
7.4	Methodology and analyses .....	126
7.4.1	Data collection .....	126
7.4.2	Specification of the cost-benefit model to analyse winners and losers in the permit system .....	128
7.5	Results and discussions.....	132
7.5.1	Description of traders and their activities.....	132
7.5.2	Traders' awareness and possession of different types of documents needed to sell NTFP .....	133
7.5.3	Informal taxes .....	134
7.5.4	Overall perception of the registration process and sources of transaction costs by traders.....	135
7.5.5	Estimated transaction costs borne by a local community-based farmer organisation to obtain an approval .....	137
7.5.6	Traders' perception of factors influencing transaction costs .....	139
7.5.7	Cost benefit analysis of the impact of transaction costs on the performance of the NTFP value chain in Cameroon .....	142
7.6	Conclusions.....	144
Chapter	.....	147
8	A Choice Experiment Approach for Assessing Incentives to Forest Law Compliance: Case of NTFP Traders in Cameroon .....	147
Abstract	.....	147
8.1	Introduction.....	148
8.2	Case study background- NTFP permit system in Cameroon.....	150
8.3	Methodology.....	151
8.3.1	Why a choice experiment.....	151
8.3.2	The choice of attributes and attribute levels.....	153
8.3.3	Designing the choice sets .....	159
8.4	Analytical Framework .....	161
8.4.1	The consumer choice model .....	161
8.4.2	The econometric model.....	163
8.5	Data collection and entry .....	164

8.6 Results.....	167
Attribute .....	168
Model 1 .....	168
Model 2 .....	168
8.7 Discussion.....	170
8.8 Conclusions.....	172
Chapter .....	174
9 General conclusions .....	174
9.1 Recapitulation of research design and objectives .....	174
9.2 General discussions .....	176
9.3 Linking research results to outcome indicators.....	181
9.4 Theoretical and policy implications .....	183
9.5 Limitation of the study and further research .....	185
Summary .....	189
Samenvatting .....	193
Curriculum Vitae.....	197
References .....	202

## **List of Abbreviations and Acronyms**

GOC	Government of Cameroon
AFTP	Agroforestry Tree Products
EO	Economic Operators
EGR	Expected Government Revenue
FAO	Food and Agricultural Organisation
GESP	Growth and Employment Strategic Paper
IE	Institutional Economics
MDG	Millennium Development Goals
MINFOF	Ministry of Forestry and Wildlife
SNV	Netherland Development Organisation
NIE	New Institutional Economics
NTFP	Non Timber Forests Products
PRSP	Poverty Reduction Strategic Paper
PSFE	‘Programme Secteurs Forêt Environment’
Rtx	Regeneration tax
RDSP	Rural Development Strategic Paper
Spx	Selling price of permit
TRpf	Total bribe received by police and forestry officers
TLp	Total additional cost incurred by traders in renting permits
TAC	Total loss incurred by traders in renting permits and in paying bribes
TREO	Total revenue received by economic operators
TC	Transaction costs
ICRAF	World Agroforestry Centre

## List of Tables

- Table 2.1: Summary of the four levels of institutions
- Table 3.1: Summary of sampling frame indicating sites and species selected for producers' survey
- Table 3.2: Markets visited during traders' survey
- Table 4.1: National policies or programs relevant to poverty and rural development in Cameroon
- Table 4.2: Scoring matrix for relevant policies in relation to trees on farm
- Table 5.1: Descriptive statistics of socio-demographic variables used in the empirical model (n = 394)
- Table 5.2: Dependent variables used in the logistic regression model
- Table 5.3: Awareness of formal definitions as used in the 1994 forestry law (N= 394)
- Table 5.4: Coefficients per modality for each variable in regression models 1-3 and suitability of model
- Table 6.1: List of villages, population density, historical and cultural characteristics
- Table 6.2: Results of Regression analysis indicating odd ratios and standard errors in parenthesis
- Table 6.3: Logit model factors affecting fear of eviction by government
- Table 6.4: Cross table analysis of total number of trees from studied species inherited as a function of total planted
- Table 7.1: Quantities and value of NTFP traded by 70 traders in 2011 for four selected species
- Table 7.2: Mean unofficial taxes paid (FCFA/Kg) by traders per product
- Table 7.3: Reasons why traders want to register officially
- Table 7.4: Reasons why traders prefer to operate in the informal sector
- Table 7.5: Estimated time and costs to compile documents to gain access to an approval by a local community- based organisation in Cameroon
- Table 7.6: Estimated amount spent by a farmer organisation in following up files after submission for a certificate of approval
- Table 7.7: Mean annual unofficial taxes and rents per trader and per species
- Table 8.1: Summary of attributes and their levels:
- Table 8.2 Example of a choice card
- Table 8.3: Socio-economic characteristics of respondents



Table 8.4: Conditional logit model: determinants of choice to obtain permits

Table 8.5: Valuation of attribute changes

## **List of Figures**

Figure 2.1: Conceptual framework indicating AFTP/NTFP value chain within Williamson's four levels of institutions

Figure 2.2: Outline of the thesis based on specific policies and institutions analysed

Figure 3.1: Map of Cameroon and its location in Africa

Figure 3.2: Map of Cameroon indicating study sites and products selected per site

Figure 4.1: Conceptual framework for analysing farmers' tree planting decisions

Figure 4.2: Effect of incentive-oriented policies on the number of trees planted

Figure 5.1: Farmers willingness to accept policy instruments

Figure 6.1: Method of acquiring land as a function of region of origin

Figure 6.2: Farmers decision to sell land as a function of method obtained

Figure 6.3: Farmers perception of ownership of land

Figure 6.4: Most important sources of NTFP listed by farmers

Figure 7.1: Actors involved in the demand, supply and control of permits in Cameroon

Figure 7.2: Indicating if trader had use and the sources of different types of formal documents

Figure 7.3: Traders perception of factors that may either ease or complicate the permit process

Figure 7.4: Relationship between buying price (FCFA) and unofficial taxes (rents + bribe)

## **List of Photos**

Photo 3.1: Njansang kernels

Photo 3.2: kolanuts parcelled in baskets

Photo 3.3: *Gnetum* spp

Photo 3.4: *Irvingia* spp kernels

# Chapter

## 1 Introduction

### Abstract

This chapter begins with a background and definition of basic terms and concepts such as Non Timber Forests Products, agroforestry domestication and institutions that will be used throughout this thesis. In the section that follows, we establish the problem statement leading to the specific objectives of the study. The chapter ends with an outline of the thesis.

### 1.1 Background and definition of concepts

Non-Timber Forest Products (NTFP) are usually defined to include all biological materials except timber that are harvested from the forest for human use (de Beer and McDermott 1989). These may include food, medicine, spices, essential oils, resins, gums, ornamentals, small wood, fibres and many other products. FAO (1999) uses the term Non-Wood Forest Products (NWFP) to describe goods of biological origin other than wood derived from forests, other wooded land and trees outside forests. One of the major reasons why some scholars prefer to use the term NTFP instead of NWFP is that the latter as defined by FAO excludes all wood products (Belcher 2003) and not only timber.

NTFP are commonly known to come from wild sources with insecure tenure over collection areas until overharvesting incentivises cultivation (Simons and Leakey 2004; Belcher and Schreckenberg 2007; Ingram 2012). Overharvesting is generally the result of increased commercialisation (Ticktin 2004; Brown and Lassoie 2010). Increased commercialisation also referred to as '*increasing the value of NTFP in trade*' (Belcher and Schreckenberg 2007) stems in part from the work of development organisations that progressively encouraged populations in forest areas to collect and sell NTFP found in their natural environment. These efforts are hereafter referred to as "*valorisation*" of NTFP (Tieguhong *et al.* 2012a). In order to reduce pressure on the natural resource base and enhance the sustainability and contribution of NTFP to livelihoods, some organisations like the World Agroforestry Centre

(ICRAF) conduct research on and encourage domestication of valuable NTFP especially indigenous fruit trees, leafy vegetables and some medicinal plants (Facheux *et al.* 2003; Leakey *et al.* 2003; Leakey *et al.* 2004; Tchoundjeu *et al.* 2006; Tchoundjeu *et al.* 2010).

*Tree domestication* for example is a process whereby trees are cultivated on-farm by farmers themselves. It is also defined as a practice whereby species are genetically improved on station (Leakey and Simons 1998; Leakey 2004). Of late, scientists started using another innovative approach for tree improvement known as participatory tree domestication. In this approach, scientists act as mentors to farmers and involve them in all domestication stages that are carried out on-farm rather than in a research station (Leakey *et al.* 2003; Leakey and Akinnifesi 2007). Put simply, participatory tree domestication refers to the means by which rural communities select, propagate and manage trees according to their own needs, in partnership with scientists, civic authorities and commercial companies. It is usually oriented at specific local markets and encompasses the use of both indigenous knowledge and genetic selection based on scientific principles (Tchoundjeu *et al.* 2006). This approach is advantageous in that it builds on tradition and culture, and promotes rapid adoption by growers to enhance livelihoods and generate environmental benefits (Leakey *et al.* 2003; Simons and Leakey 2004).

Integrating and growing trees on-farm is part of “*agroforestry*” (Leakey 2011). The concept of agroforestry is broad and has evolved over the years. The most recent and widely used definition is the one provided by Leakey (1996). It states that ‘agroforestry is a dynamic, ecologically based, natural resource management system that, through the integration of trees in farm and rangeland, diversifies and sustains production for increased social, economic and environmental benefits’. For Wiersum (1996), agroforestry systems usually result from the gradual modification of forests by enriching them with useful crops which may not include agricultural crops but in many cases will be trees producing NTFP. Other definitions of agroforestry are not different from the ones already stated and generally include voluntary planting of trees and their interactions with crops and livestock for optimal land use and generating benefits to farmers and the environment.

Belcher and Schreckenberg (2007) recognise that NTFP encompass a wide range of products and that they are sometimes defined by what they are not (Belcher 2003). As a consequence, a lot of inconsistencies arise in existing literature. For example, many terms are used to describe

NTFP amongst which secondary, minor, special or specialty non-wood and non- traditional products (Chamberlain *et al.* 1998) often occur. Complications as to what constitutes NTFP are further exacerbated by the influence of domestication and agroforestry development. Domestication and agroforestry have resulted in a scenario whereby species that were initially collected from the wild or that were only sparingly cultivated for home consumption are now increasingly integrated on-farm as cash crops (Leakey *et al.* 2004; Tchoundjeu *et al.* 2006; Tchoundjeu *et al.* 2010). Above all, there is evidence that research about the poverty reduction role of NTFP has led to the recognition that many NTFP are no longer exclusively harvested from the wild but are indeed cultivated on farm (Ruiz Perez *et al.* 2004; Simons and Leakey 2004). In line with the definition of agroforestry given above, agroforestry tree products (AFTP) is the term put forward by Simons and Leakey (2004) to distinguish NTFP that have been domesticated in agroforestry systems from those collected in the wild.

Early interests in agroforestry research were centred on improving soil fertility (Young 1997). With the recent drive towards ecological approaches to development and an increase in demand for NTFP, agroforestry research has made progress towards domestication of species in many parts of the tropics. The latter concentrates on scattered indigenous species producing fruits, nuts, medicinal plants and other products that was uncommon in farming systems. While these agroforestry species had been overlooked by agricultural and horticultural sciences (Leakey 2004), it is now widely accepted that agroforestry can contribute significantly to the achievement of virtually all the millennium development goals (Garrity 2004) amongst which eradicating extreme poverty is one of the most important and is at the centre of the current international development agenda (Place and Swallow 2002; Schreckenberg *et al.* 2006a; Buttoud 2013). In Europe and America, it is now believed that agroforestry can improve the sustainability of farming systems, diversify farmers' incomes, provide new products to the wood industry and create new landscapes (Garrett and Buck 1997; Dupraz *et al.* 2004; SAFE 2004).

Value chain characterisation is an integral part of tree domestication and agroforestry programs (Leakey and Simons 1998; Leakey and Akinnifesi 2007). Market expansion is considered as one of the first steps in the successful domestication of wild fruit trees (Akinnifesi *et al.* 2006) because without an expanded market for NTFP, farmers may not have the incentives to intensively adopt domestication technologies. For this reason, policy researchers are advised to conceive NTFP development approaches that include both

domestication and commercialisation initiatives (Leakey and Simons 1998). One way to do so is to use a value chain approach.

A value chain describes a full range of actors and activities starting from production to consumption (Kaplinsky and Morris 2002). For businesses to be successful, all elements in the value chain must work well (Belcher and Schreckenberg 2007). Therefore, by using the value chain approach, actors and activities along the chain that may need policy intervention for pro-poor development can easily be identified.

At the production level, tree domestication can be used to meet market requirements by developing varieties to meet product quantity and quality, product uniformity and expansion of the harvest seasons. In addition, only tree species with a high market potential are domesticated (Leakey *et al.* 2003; Garrity 2004; Akinnifesi *et al.* 2006). In this way, NTFP/AFTP markets can be expanded to generate increased cash income that is beyond opportunistic marketing of wild species (Akinnifesi *et al.* 2006). All of this means that farmers who take part in NTFP/AFTP value chains where tree domestication and valorisation activities are an integral part of the value chain, are expected to have better market access as they supply what the market requires. Improved market access is expected to enhance farmers' income, and provide farmers' incentives to cultivate and sell indigenous fruits of all kinds.

This study focuses on NTFP and also on agroforestry development with attention to on-farm cultivation of indigenous species by smallholder farmers. Since the same indigenous species are also found in the wild, the term NTFP will be used when reference is made to wild provenances of indigenous fruits and leafy vegetables whereas AFTP will be used when referring to fruits and leafy vegetables harvested from farmers' fields. In the case where reference is made to both NTFP and AFTP, the coupled abbreviation 'NTFP/AFTP' will be considered. In the same line of reasoning, collectors will be used to refer to collection from the wild while producers will be used for AFTP. Similarly, the joined words collectors/producers will be used when referenced is made to both wild and on-farm provenances.

## 1.2 Problem statement

In the past three decades scholars and development actors in both developed (Garrett and Buck 1997; Dupraz *et al.* 2004) and developing countries (McGinty *et al.* 2008; Place *et al.* 2012; Roshetko *et al.* 2006) have been working on strategies to develop agroforestry because of its livelihoods, biodiversity and ecosystems services. It has even been reported that agroforestry research and development can contribute to virtually all the millennium development goals (Garrity 2004). However, widespread adoption of agroforestry technologies is still hindered by numerous problems including among other things, the design of appropriate agroforestry technologies, institutional constraints, availability and distribution of production factors and lack of national policies and strategies for agroforestry development (Garrett and Buck 1997; Garrity 2004; Kaonga 2012; Place *et al.* 2012). While all these problems are important to address, this study will focus on the last one-lack of policies and strategies for agroforestry development.

According to Garrity, (2004) the full potential of agroforestry to meeting MDGs cannot be fully met if countries do not have adequate policies and strategies that recognise the technology as part of their development agenda. The pertinence of agroforestry policies and a lack of it in many countries may justify a recent publication of an agroforestry policy decision guideline by FAO aimed at encouraging national governments to develop such policies (Buttoud 2013). This study is thus conducted as a contribution to knowledge necessary to design such policies and policy instruments with particular attention to Cameroon.

West and Central Africa and particularly Cameroon is one of those countries that have championed valorisation of NTFP as well as research on participatory tree domestication and on-farm integration of indigenous fruit trees and other wild leafy vegetables (Leakey *et al.* 2003; Tchoundjeu *et al.* 2006; Tchoundjeu *et al.* 2010). The country is endowed with a variety of species found in the wild and on farmers' fields (Schreckenberg *et al.* 2006a; Tchoundjeu *et al.* 2006; Ingram and Schure 2010). Despite attempts made to develop Agroforestry in Cameroon, the country is no exception with regards to the problems plaguing the uptake of the latter technologies. In fact, efforts made so far to increase adoption of improved agroforestry technologies and also to increase the contribution of NTFP to livelihoods are yet to reach satisfactory levels (Nkamleu and Manyong 2005; Schreckenberg *et al.* 2006a; Belcher and Schreckenberg 2007; Ingram and Schure 2010; Place *et al.* 2012;



Tieguhong *et al.* 2012a). Although the general causes of the slow up-take of agroforestry technologies have been presented above, there is every reason to suggest that each country is different or may be unique especially with regards to geographical, social, political and cultural issues.

In Cameroon, factors linked to the low adoption of agroforestry technologies and the weak contribution of NTFP to livelihoods include amongst others, climate conditions, household and farm limitations (resource endowment, size of household) and attributes of the technology such as time lag to reach maturity (Nkamleu and Manyong 2005; Place *et al.* 2012). Other constraints are related to inefficient policies which need to be addressed for agroforestry to meet its full potential (Ndoye *et al.* 1998; Russell and Franzel 2004; Nkamleu and Manyong 2005; Schreckenberg *et al.* 2006a; Schreckenberg *et al.* 2006b; Tchoundjeu *et al.* 2006; Ingram and Schure 2010; Ndoye and Awono 2010; Ingram 2012; Tieguhong *et al.* 2012a). The importance of policy to agroforestry development is further emphasised by Place *et al.* (2012). They report that evidences exist which suggest that the policy framework plays an important role in distinguishing countries and regions which have taken advantage related to agroforestry from those who have not. These mean that we cannot undermine addressing policy related constraints to agroforestry development in Cameroon.

Policy-related constraints reported in the above-mentioned literature in Cameroon are associated with national legislation intended to conserve and preserve natural resources and those related to access and security of land. These studies generally suggest that: (i) existing legislation generally limits trade in indigenous species and is hypothesised to discourage farmers from planting the trees; (ii) identically, tree planting is hindered by problems related to access to or lack of improved planting materials even though research has adapted vegetative propagation techniques to indigenous species to ease replication by farmers. The latter is generally linked to but not limited to inefficient agricultural extension systems. Other problems are (iii) related to property rights over land and trees.

The regulation component is significant for Cameroon, as NTFP commercialisation and domestication have led to the cultivation of fruit trees on farm land where the same products are produced as those that are gathered from the wild. This leads to situations where tree products harvested from farms are often subjected to state regulations intended to conserve natural resources in the wild. Moreover, NTFP and land are natural resources which besides

being subjected to formal rules are also subject to informal regulations which are often part of the cultural heritage of the people who use them. Unfortunately, state institutions and informal rules governing the same resource may contradict each other.

These policy and institutional gaps simply mean that existing strategies and institutions have not accompanied recent developments in AFTP/NTFP research and market development, and thus expose areas of concern for further research. Above all, if NTFP from the wild and AFTP from farmers' fields are expected to contribute to sustainable income generation whilst at the same time conserving the natural resource base, two issues need to be addressed: first, government policies should not limit market access for these products and second, NTFP commercialisation needs to be facilitated by appropriate institutions that guarantee access to natural resources, distinguish and protect property rights of agroforestry farmers and NTFP collectors.

Following North (1990), institutions are defined as 'the rules of the game' which define incentives and sanctions affecting people's behaviour. When dealing with institutions, key concerns are about how institutions operate or interact to affect property rights, information flows, transaction costs and risks, and market access failures for different participants (Williamson 1985; Doward 2001; Doward *et al.* 2003). While most studies on NTFP generally recommend interventions at policy and institutional level, only a handful (Schreckenber *et al.* 2006a; Laird *et al.* 2010a; Ndoye and Awono 2010) have specifically studied the existing policy and institutional environment governing access and trade. Moreover, most of the studies pay limited attention to the impact of policies and institutions on agroforestry development specifically on the cultivation of trees on farmers' fields and on trade in AFTP/NTFP.

Whereas, regulations and legislations governing access to NTFP and land are known, little has been documented about farmers and traders responses to these formal institutions or their awareness and perception of the rules governing access to and trade in AFTP/NTFP. Whether, how and to what extent formal institutions affect farmers' tree planting decisions and traders' performance in the NTFP/AFTP value chain remains an open question in the literature. The scarcity of empirical data on farmers' and traders' perception and expectations of existing institutions is disappointing even though it is this sort of information that policy makers need

when developing policies or interventions to stimulate pro-poor growth that incorporates elements of the NTFP/AFTP value chain.

### **1.3 Main objectives and research questions**

The main objective of this study is to assess the institutional environment governing AFTP/NTFP value chain in Cameroon. Four main themes are studied: (i) existing policies governing AFTP/NTFP sectors; (ii) the legal framework to accompany existing policies; (iii) how existing rules including informal rules governing access affect property rights to land and trees and finally (iv) how formal rules regulate and influence market access. In other words, the study examines existing policies and legislation governing exploitation, cultivation and trade in NTFP/AFTP and their effect on the performance of the value chain.

Specific emphases are put on:

- (i) a reality check based on NTFP/AFTP collectors/producers' awareness, perceptions, and attitudes towards opportunities and threats posed by existing formal policies and regulations governing land and trees on their incentives and decisions to plant selected indigenous fruit tree species. Moreover, an assessment is made of the interaction between formal and informal institutions in the management of access rights to land and trees and how they can be changed.
- (ii) the effect of such policies and regulations on traders' activities with special attention on their decisions to operate in the formal or informal sector, and the consequences of their decisions on the performance of the value chain. Besides, an attempt is made to investigate how negative consequences can be improved upon.

To better understand policy and institutional constraints and opportunities that affect the integration and performance of farmers and traders in the NTFP/AFTP value chain, a framework was developed to address the following fundamental questions:

- (i) What policies/strategies currently exist to address tree planting in Cameroon and do these policies and regulations have any (un)intended consequences on agroforestry development in the country?

- (ii) What are collectors/producers' awareness of and attitudes towards these policies and institutions in relation to agroforestry development?
- (iii) How do formal and informal institutions interact to manage both NTFP and AFTP including ownership of land on which trees grow?
- (iv) How do traders dealing in these products cope with formal rules governing trade and how do these rules affect their activities and performance in the value chain?

These questions are answered using two sets of data. The first set consists of data collected from farmers involved in the collection/production of three selected NTFP/AFTP in Cameroon. The second set of empirical data was collected from traders dealing in similar products including a wild leafy vegetable. Various secondary data were obtained based on a review and analysis of relevant scientific and government documents and regulations.

## **1.4 Thesis outline**

This research is divided into three parts. Part one sets the scene and consists of chapters one, two and three. Chapter one provides the general introduction and problem statement leading to research objectives and research questions. In chapter two, the core theories underpinning the research are discussed. The chapter begins with a contextual definition of the concept of institutions as it will be used in the study. In addition, a framework is developed based on the four levels of institutional analysis developed by Williamson (2000a) and the Institutional Analysis Development framework proposed by Ostrom et al. (1994). In between, the concept of value chain is also illustrated as our unit of analysis specifying parameters to assess the influence of the institutional environment on the performance of the NTFP/AFTP value chain. Chapter 3 presents the setting of the research. It starts with a general introduction of Cameroon and a brief description of the research area. The social and economic importance of the selected NTFP studied in this thesis is also portrayed in this section. Later in the chapter, the sampling plan that describes how research sites, products and respondents were selected is presented.

Part two is the results section. It is made up of chapters four to eight. Chapter four presents the general policy and institutional environment governing trees in Cameroon. Based on content analyses, the chapter analyses whether existing policies and legal instruments provide

incentives or disincentives for agroforestry development. Chapter five examines farmers' awareness of existing policy instruments and questions their willingness to accept proposed policy options aimed at improving from a state's perspective existing laws governing AFTP. In chapter six, the study explores farmers' perception of land and tenure security as an important factor to agroforestry development. It principally focuses on the interaction of formal and informal rules governing land and tree property rights as both interact to manage natural resources in farmers' environment. Chapter seven investigates why NTFP traders prefer to rent instead of applying for their own permits to sell NTFP as specified by the law. In this regard, sources and effects of high transaction costs in the permit system such as corruption and rent seeking are analysed. In chapter eight, a choice experiment is developed as a tool to probe options to improve the current process of obtaining permits in the NTFP sector in Cameroon.

Part three consists of chapter nine - the conclusion. It presents the main findings of the research and makes recommendations to design optimal rules for agroforestry development in Cameroon.

## **Chapter**

# **2 The Theoretical and Conceptual Framework to Understand Policies and Institutions Governing NTFP and AFTP**

*'It is hard to make much progress in the study of institutions if scholars define the term to mean almost anything' (Ostrom, 2005 p 820).*

## **Abstract**

The concept of institutions is broad and complex (Hodgson 1998; Williamson 2000a). This contributes to the confusion that usually arises with respect to the scope of a given institutional analysis or the focus of a given study. In this regard, this chapter starts by revisiting the definition of institutions as it is understood in this thesis. Then, the theoretical and conceptual framework that is applied in the succeeding chapters of the study is described. In this case, reference is made to the four levels of institutional analysis developed by Williamson (2000a). In addition, the Institutional Analysis Development framework (IAD) proposed by Ostrom *et al.* (1994) and further developed by Doward and Omamo (2009) are also shortly described. The concept of value chain is defined in this chapter as the action domain within the IAD framework of action arenas which are social spaces in which actors interact in social and economic exchanges (Ostrom *et al.* 1994; Doward and Omamo 2009). The conceptual framework shows how actors in the NTFP/AFTP value chain interact with their institutional environment (both formal and informal institutions). It also shows the possible effects of these institutions on the performance of different actors in the AFTP value chain. In this respect, the link between institutions and economic performance is established.

## 2.1 Introduction

The use of theories in forest policy analysis became fashionable in the past two decades prior to 2010, and five broad band theories are commonly used in the discipline (Arts 2011). These include rational policy analysis; policy network analysis; advocacy coalition framework, critical policy analysis and the institutional policy analysis. As introduced in chapter one, the New Institutional Economic framework (NIE) which falls within the scope of the institutional policy analysis theories as defined by Arts (2011) is used in this thesis as the main theoretical lens to analyse the policy environment governing NTFP and agroforestry development in Cameroon.

The main premise of this school of thought is that institutions as rules are the key to economic performance. The concept of institutions is broad and complex (Hodgson 1998; Williamson 2000a) and this usually leads to confusion with regards to the focus of a given study where the notion is applied. In this regard, this chapter starts by revisiting the definition of institutions as it is understood in this thesis.

## 2.2 Defining institutions

Bromley (2008b) states that countries and their economic systems are made up of laws that indicate acceptable and proscribed domains of individual and collective action. These legal realms are a country's institutions. These institutions define (Bromley 1989):

*duties*: what individuals must or **must not do**;

*privileges*: what individuals **may** do without interference;

*rights*: what individuals **can do** with the aid of the collective power; and

*no rights*: what individuals **cannot** expect others to do on their behalf.

The most widely used definition of institutions is that provided by North (1990) which states that institutions are 'the rules of the game' and organisations are 'the players of the game'. Institutions defined as rules, may be formal/written (legislation, regulations, constitution, rights, etc) or informal/unwritten (sanctions, norms of behaviour, beliefs, traditions) in nature; devised by humans to reduce uncertainty and control their environment (Ménard and Shirley

2008). According to Schmid (2004), institutions are more than just the rules of the game providing constraints to human behaviour. They also offer opportunities to achieve what an individual cannot do on his/her own. Bromley (2009) adds that ‘institutions are the means whereby the collective control of individual action is given effect’ (p. 31). In other words, institutions define fields of action for individuals in society.

To better understand institutions, it is often recommended to make a distinction between institutions and organisations as proposed by North (1990). In most literature, institutions and organisations are frequently used interchangeably or as synonyms. This often leads to misunderstandings and misguided interventions (Lobo 2008; Bromley 2009; Kirsten *et al.* 2009). Within the context of institutional analysis, institutions are a set of complex norms and behaviours that persist over time by serving some collectively valued purposes. Organisations refer to a group or association which may be formal or informal in which there are defined and acceptable roles, positions and responsibilities which are structured in some relationship to each other in order to achieve a set of common objectives (Uphoff 1986, 1992; Lobo 2008). Examples of organisations include trade unions, producer groups, and government departments.

Bromley (2009) elaborates on the basic distinction between everyday use of the term institutions as a synonym of an organisation such as a church or a cooperation, and its use as will be applied in this study. He points to the fact that organisations such as a church or cooperation acquire their meaning from the rules (institutions) that govern them. If for example, one has to explain the doctrine of Catholicism to a novice or a child, the explanation will necessarily comprise what a catholic does and does not do as well as what Catholics believe in. In this case, belief constitutes commitment to the working rules of the Catholic Church. The same could apply for governmental departments and polity.

Given the above interpretation, institutions in this study are limited to formal and informal laws, rules, norms or strategies (North 1990; Ostrom 2005) that can be considered as systems used to shape human activities or interactions amongst humans in order to reduce uncertainty and risk as they interact to access land, to collect NTFP, and to produce AFTP, and to trade in both AFTP and NTFP. Institutions are thus expected to provide incentives or sanctions related to access, production and trade in NTFP and AFTP.



Rules, norms and strategies are defined as follows:

- **Rules** refer to shared prescriptions (must, must not, or may) that are mutually understood and predictably enforced in particular situations by agents responsible for monitoring conduct and for imposing sanctions (Ostrom 1998, 2005).
- **Norms** are prescriptions that are known and accepted, yet tend to be enforced by participants themselves through internally and externally imposed costs and incentives (Ostrom 1998, 2005). Norms do not arise from the rulings of an authority. They are generally considered as daily practices we learned from our mother (Bromley 2009).
- **Strategies** represent regularised plans that individuals make within the structure of incentives produced by rules, norms and expectations of the likely behaviour of others in a situation affected by physical and material conditions (Ostrom 1998, 2005).

## 2.3 NIE: framework for analysing economic performance

The NIE is a relatively new and multidisciplinary paradigm (Kim and Mahoney 2005; Williamson 2009; Ménard and Shirley 2012) that deals with aspects of economics, history, sociology, law, business organisation and political science (Kherallah and Kirsten 2002). Its origin dates back to the seminal article by Coase (1937) *'The nature of the firm'*. This new branch of economics holds that the cost of transacting determined by institutions and institutional arrangements are key to economic performance. Based on this relationship, it is generally argued that the institutions of a country as determined by its political, legal, and social systems determine its economic performance (Kherallah and Kirsten 2002). According to Coase (Coase 1998; 2000), it is this consideration that gives the NIE its place amongst economists.

The phrase 'New Institutional Economics' was coined by Williamson to differentiate the subject from the Old Institutional Economics. The old institutional economists recognise that institutions influence human behaviour but they were anti theoretical with regards to the neo-classical economic thinking. On their part, the neo-classical economists are strong in theory but do not consider that institutions matter and most often do not deal with the real world (Coase 1998; Kherallah and Kirsten 2002).

The NIE bridge the gaps left by the old institutionalists and the neo-classical economists. It acknowledges that institutions are key to economic performance but also states that institutions can be analysed within the framework of the neo-classical economics. In this regard the NIE consider that transactions are carried out in real world conditions. It therefore relaxes some of the unrealistic assumptions of neo-classical economics (such as pure and perfect information, zero transaction costs and full rationality). Contrary to neo-classical economics, NIE assume instead that individuals have incomplete information and limited mental capacity and because of this they face uncertainty about unforeseen events and outcomes and incur transaction costs to obtain information (Ménard and Shirley 2008). Individuals therefore create institutions to reduce risks and uncertainty. However, unlike the old institutional economics, NIE maintain the neo-classical assumption that individuals are self-seeking beings attempting to maximise an objective function subject to constraints (Kherallah and Kirsten 2002).

North (2005) further notes that NIE attempt to answer some of the questions classical economics do not address such as the processes of economic, social and political changes. Institutionalists in contrast aim to understand change by understanding human incentives and intentions and the beliefs, norms and rules that they create in pursuit of their objectives. Use of a combination of the NIE and the neo-classical economic theories and assumptions will be further elaborated in chapters seven and eight where they are used to explain sources of transaction costs and illegal activities in the issuing of permits in the NTFP sector in Cameroon.

Kherallah and Kirsten (2002) identify eight main fields of the NIE. These include new economic history, public choice and political economy, transaction costs economics, social capital, property rights, economics of information, theory of collective action and law, and economics. Ménard and Shirley (2012) acknowledge a similar diversity and distinguish: transaction costs; property rights and contracts as the core ones that make the NIE paradigm so distinctive.

As briefly explained in chapter one, the first key concept, *i.e. transaction costs* has its roots in Coase's (1937) paper '*The nature of the firm*' in which he questions why all transactions are not necessarily carried out in the market. His answer was that there are costs in transacting through the market. These costs exist because a given trader at any time in a given market

needs to find a person to whom to sell. He needs to know the prevailing price in the market and what price goes for what quality, bargain, and strike a deal and monitor the deal. In order to reduce such costs, a firm may decide to replace the cost of bargaining with some form of coordination by a hierarchy. The choice to transact either through the market, a firm or a hybrid of the two became Oliver E. Williamson's core area of interests and formed the foundation of the Transaction Costs Economics (TCE). In his research, Williamson combined the core concepts of bounded rationality, and opportunistic behaviour (manifested through adverse selection, moral hazard, cheating, shrinking and other forms of strategic behaviour) to explain contractual choice and the ownership structures of firms.

The second key concept, i.e. *property right*, emerges from Coase's earlier work of 1960, '*The problem of social costs*' that occur when the exercise of an owner's rights yields costs (externalities) to the owners of other rights. Such externalities can be reduced in a situation of no transaction costs through the process of bargaining and negotiations. In such a situation, the trade going on between two concerned persons is *the right to perform a certain action*. This view is in contradiction with the neo-classical school that assumes that people trade physical or virtual commodities (Ménard and Shirley 2012). The NIE concept of property rights was further developed by Alchian (1965). He defined property rights as a set of rights to take permissible action to use, transfer or otherwise exploit or enjoy a property. There are, however, differences between Coase's view of property rights and that of Alchian. While Coase argued that property rights are established and enforced by legal systems, Alchian drew to attention that rights are more enforced by etiquette, social customs and social exclusion.

The third key concept i.e. *Contract*, like the other two, was again introduced by Coase. Two main assumptions are considered. Contracts are either written or unwritten agreements between parties that are: (i) never perfectly enforced; and (ii) are never perfectly complete. These two assumptions later on evolved into the two main branches of NIE (Ménard and Shirley 2012). On the one hand, the Northean branch focuses on the key role of contract enforcement and the institutions it requires, particularly the polity (form of government). This branch later developed into a theory of its own based on detailed analyses of the role of force in protecting property rights, and of the trade-off between high costs of private protection of property and the risk of state protection which might limit private costs but also give opportunities for the state to interfere on private rights (North *et al.* 2009). On the other hand, the second branch led by Williamson, focuses on the assumption of incomplete contracts. The

incomplete contract theory of the firm combines insights from the transaction costs theory with emphases on bounded rationality. The theory focuses on how different organisations assign property rights to resolve the issues that arise when contracts are incomplete (Kherallah and Kirsten 2002).

In this thesis, insights from all these three fields (transaction costs, property rights, contract) will be used although emphasis is on the first two key concepts i.e. transaction costs and property rights. Use of these two concepts in institutional analysis is illustrated in the next section (see also Table 2.1).

## **2.4 Levels of institutional analysis and links to research questions and objectives**

In analysing institutions reference is often made to the institutional environment and institutional arrangements (Williamson 2000a):

*the “institutional environment”* defines the macro level in which organisations and transactions are embedded. It thus affects the behaviour and performance of economic actors (North 1990). The *macro level analysis* refers to a set of fundamental political social and legal grounds, rules, information flows and culture which govern and constrain production and exchange in a society (Williamson 2000a; Bienabe *et al.* 2004; Doward and Omamo 2009; Kirsten *et al.* 2009);

Conversely, *“institutional arrangements”* refer to the micro level rules of governance (Kherallah and Kirsten 2002). The *micro level analysis* deals with the set of rules and structures governing a particular transaction (Doward *et al.* 2005). According to Williamson (1993), an institutional arrangement between economic units is an agreement which governs the ways in which these units can compete and/or cooperate. Such analysis usually includes individual transactions and questions regarding organisational forms.

Williamson (2000a) provides an analytical framework to describe complex institutions such as those governing NTFP, AFTP and other natural resources. The framework identifies four levels of institutional analysis.

Level one is the *Social embeddedness* level and deals with aspects of the *informal institutional environment*. This level does not actually fall within the realm of economics but rather in the field of social theories such as anthropology and sociology. However, the fact that it plays a fundamental role in the economic functioning of institutions warrants that it is included when discussing the origins and role of institutions (Kirsten *et al.* 2009). For example, Granovetter (1985) illustrates that peoples' economic activities are regulated by the norms and values they have acquired in their community and that social structures are key to understanding how institutions are arrived at. In other words, economic activities are embedded in cultures and value systems (Dimaggio 1994; Kirsten *et al.* 2009). This study adopts these arguments and analyses the social embeddedness of NTFP/AFTP collectors and producers characterised by cultural differences such as customs, traditions, respect for traditional values and other societal norms. These institutions change very slowly to the order of centuries and even millennia (Williamson 1998). The interaction of these slow-changing institutions with formal rules to govern access and use of natural resources such as NTFP and land is investigated in chapters five and six.

Level two is the *Formal institutional environment*. In this thesis, the focus is on the formal rules governing the NTFP/AFTP sector. Institutions at this level provide opportunities for '*first order economising: getting the formal rules of the game right*' (Williamson 1998). Despite the importance of institutions for economic productivity, at this level, they do not change that rapidly and may generally take between decades and centuries (Williamson 2000a). Much of the economics of property rights fall within this level of analysis. The economics of property rights assumes that private enterprises cannot function properly unless property rights to resources are effectively defined and enforced. Chapters four, five, six and seven of this thesis address aspects of the formal institutional environment. They will focus on the legislation governing access to and trade in NTFP/AFTP including how these formal institutions (legislation and regulations) define property rights, ownership and security of land and tree resources, and how they can be improved.

Level three refers to *Institutions of governance (play of the game)*. At this level, analysis goes beyond the rules of the game to include how the game is played. Here, institutions of governance or institutional arrangements are discussed including issues of contract definition and enforcement (Doward *et al.* 2005). Institutions at this level change between every, one to

ten years and Williamson (1998) refers to this as ‘*getting the governance structure right, or second order economising*’. The institutional environment, together with specific characteristics of the good or service and the contracting parties, influence the nature and type of institutional arrangements (North 1990; Hobbs 1995; Doward *et al.* 2005). In this thesis “governance” is not related to the play of the game between producers and traders in the value chain; instead, the unit of analysis is a transaction between producers or traders and their interaction with government procedures in order to respect formal rules governing trade in NTFP.

Transaction costs are important in analysing this type of institutional arrangements (i.e. level-three institutions). The main assumption here is that actors, transacting in an economy such as the NTFP/AFTP value chain who are characterised by low financial resources and weak information flows, often face high transaction costs. These costs may influence the choice of the governance mechanism chosen by actors in the chain and may limit the general performance of the value chain (Williamson 2000a; Benham 2005). The choice of a given governance mechanism is in line with the efficient alignment hypothesis (Williamson 2009). The hypothesis stipulates that, ‘*transactions which differ in their attributes are aligned with governance structures which differ in their cost and competences, so as to effect a (mainly) transaction cost economising outcome*’. In chapter seven, the concept of transaction costs theory is used for analysing the issuing of permits to sell NTFP and to further explain the influence of high transaction costs on licit and illicit activities in the NTFP value chain.

The last level of institutional analysis (level 4) deals with *Resource allocation and employment* (prices and quantities, incentive alignment, marginal analysis). This thesis does not go deep into this type of analysis that puts emphasis on the neo-classical school of thinking. However, since part of the objectives of this study is to evaluate the effect of institutions on value chain performance, cost-benefit analysis is used in some chapters to assess the decisions of actors as a result of their interaction with other levels of institutions. Table 2.1 gives a summary of the four levels of institutions and their link to the core chapters of this thesis.

Table 2.1: Summary of the four levels of institutions and links to thesis chapters

Levels	Core elements	Application in the thesis	Theory	Core chapters
Level 1: Social embeddedness / Informal institutions	Informal rules, customs, culture, norms, ethnicity, value	The interaction of informal institutions with formal rules to govern access and use of natural resources such as NTFP and land	Social theory	Four, five and six
Level 2: Institutional environment	Formal rules of the game-especially property rights, polity, judiciary, bureaucracy	Formal institutional environment with focus on the legislation governing access to and trade in NTFP/AFTP including how these formal institutions (legislation and regulations) define property rights, ownership and security of land and tree resources and how they can be improved	Economics of property rights	
Level 3: Governance	Play of the game especially contract, aligning governance structure with transactions	How do traders dealing in the studied species cope with formal rules governing trade and how do these rules affect their decisions to operate in the formal or informal sector; what are the consequences of their decisions on the performance of the value chain? how best can we reduce transaction costs in the permit system	Transaction costs	Seven and eight
Level 4: Resource allocation and employment	Prices and quantities, incentive alignment		Neoclassical economics/ , Agency theory	

Source: Adapted from Williamson (2000a)

## 2.5 Conceptual framework for analysing the institutional environment of the NTFP/AFTP value chain in Cameroon

The study of institutions lies on three essential foundations: frameworks, theories and models (Ostrom 2011). A framework depicts elements and relationships that one needs to consider in a given institutional analysis and may be made up of different theories. In section 2.3, the four levels of institutions and related theories were discussed as the basis of major assumptions that are made in this thesis. The objective of this subsection is to describe the AFTP/NTFP value chain as the action domain in a conceptual framework to understand policies and institutions governing, access, production and trade in AFTP/NTFP in Cameroon.

The importance to illustrate the action domain is founded on the conceptual framework for institutional analysis used by Doward and Omamo (2009) and inspired by the Institutional Analysis Development framework (IAD) developed by Ostrom *et al.* (1994). In the IAD framework, action arenas are defined by social spaces in which actors interact in social and economic exchanges (Ostrom *et al.* 1994; Doward and Omamo 2009).

Theoretically there are four sections in the action domain (Ostrom 2005; Doward and Omamo 2009; Ostrom 2011). These are institutions, activities, actors and outcomes. Above all, the action domain is made up of *institutions* ruling activities; the *activities* that actors engage in; and the *actors* performing the activities. The interaction between institutions, actors and activities involves actions that lead to *outcomes*. The outcomes of the actions may reinforce or change the institutional environment, institutions, activities and actors. The resulting impact of these interactions may be an increase or decrease in the volume or value of a resource, the wealth and aspiration of actors, all of which may lead to institutional change.

The analytical framework for this thesis therefore identifies specific institutions governing the AFTP/NTFP value chain, the activities that are influenced by selected institutions and the actors operating within the given institutional environment. The framework also shows the relationships between actors in the AFTP/NTFP value chain and explains how they network with the formal and informal rules governing NTFP/AFTP and the possible effect of these interactions on the performance of the value chain.



### 2.5.1 The action domain-AFTP/NTFP value chain

A value chain was defined in chapter one as including a full range of activities starting from production to consumption (Kaplinsky and Morris 2002). Pietrobelli and Saliola (2008) add that a value chain involves a set of activities from conception to production and beyond. According to Belcher and Schreckenberg (2007), some authors use supply chains or market chains as synonyms for value chains. Lazzarini *et al.* (2001), for example, define a supply chain as ‘a set of sequential, vertically organised transactions representing successive stages of value creation’. Value in this case represents the amount consumers are ready to pay for what is produced (Van Der Vorst 2006). A similar concept to value chain is ‘*filière*’ commonly used by French scholars to describe the flow of physical inputs and services in the production of a final good or service (Kaplinsky and Morris 2002).

Belcher and Schreckenberg (2007) describe an AFTP/NTFP value chain as made up of a ‘chain or network of different types of organisations, from loose individuals to associations, to shareholder companies’ who collect the products from the forests, or planted fields to end-consumers. Based on this description and for analytical purposes, the multiplicity of actors in the NTFP/AFTP production-to-consumption value chain in Cameroon can be grouped into direct and indirect actors. Direct actors are those who make a living from these products whereas indirect actors are those who regulate the sector or who enforce regulations. Direct actors include collectors/producers, traders and consumers. Indirect actors in the chain may include the government that defines policies and also formal institutions that oversee access to resources, and lastly national and international NGOs and research organisations that work at different levels to influence either policies or institutions governing access and trade.

Figure 2.1 describes schematically the AFTP/NTFP value chain in Cameroon and its interaction with the institutional environment. It shows the interactions and linkages in the action domain mainly between actors, their activities, resources and institutions in the chain. In the middle of the figure are the direct actors of the value chain and the activities they perform. The illustration depicts collectors who may either source NTFP from the wild (forests) or producers who harvest AFTP from their farms. These producers then sell to traders. These traders may be wholesalers, retailers, or exporters. With regards to the objective of this study, traders will generally be defined to be those who travel to producer

villages to buy and later on sell to either exporters or retailers. The latter may then sell to consumers.

According to Williamson (1993), an institutional arrangement between economic units is an agreement which governs the ways in which these units can compete and/or cooperate (see section 2.1). In a value chain, the institutional arrangement deals with coordination between actors in the chain when they exchange goods for money (Bienabe *et al.* 2004). Understanding how actors in a value chain coordinate their activities is important in defining performance of the chain (Schreckenberg *et al.* 2006b). However, the focus of this research is more on how formal and informal institutions govern the value chain and influence these interactions and less on how arrangements between the actors are established. This is manifested by the broken arrows linking producers, traders and consumers in the diagram. To understand institutional arrangements between producers and traders in the AFTP/NTFP value chain in Cameroon see (Foundjem-Tita 2009; Foundjem-Tita *et al.* 2011; Foundjem-Tita *et al.* 2012a)

The representation (Figure 2.1) shows that these actors do not operate in a vacuum. Their activities are constrained within an institutional environment defined by formal (policies, regulations, strategies) and informal institutions (norms, cultures, beliefs) generated by government and customary structures, respectively. These institutions are commonly beyond the influence of producers and traders but they (institutions) influence their activities, i.e. production and collection of AFTP and NTFP, respectively (Bienabe *et al.* 2004; Doward and Omamo 2009). Institutions are expected to define the conditions of access to NTFP and AFTP including land and/or to provide necessary incentives to stimulate planting and/or management of trees. The actors have almost no direct influence on the way formal institutions are designed. By being part of local communities, one could assume that actors may impact on informal institutions. Yet, because norms, cultures and beliefs are embedded and slow to change, the impact of an individual actor is probably also here neglected.

Within the institutional environment, we have actors who work with either government or local communities to maintain, enforce or influence institutional change (both formal and informal) governing natural resources. These actors may be NGOs involved in valorisation activities and therefore they advise farmers to collect and sell NTFP for their livelihoods. As a result, they lobby for government to ameliorate existing rules which limit economic rights to

NTPF. Other actors may be research centres, both national and international, that explore ways to ameliorate planting materials and thus provide incentives to increase adoption of domestication and agroforestry technologies.

The government of Cameroon has the responsibility to provide the necessary incentives for the uptake of new technologies by devising policies and strategies for farmers to take advantage of existing technologies and opportunities to improve their livelihoods. The government also has the prerogative to develop regulations to meet other objectives like conservation of the existing resource base. However actors operate in an environment characterised by cultural and ethnical differences. These cultural habits and values are deeply held by the actors and resilient to change, and may thus affect their' perception and behaviours relative to formal institutions as they both interact to manage natural resources (Williamson 2000a; Ostrom 2005; Doward and Omamo 2009). The interaction between actors, institutions and activities determines the outcome which in this study is the performance of the value chain.

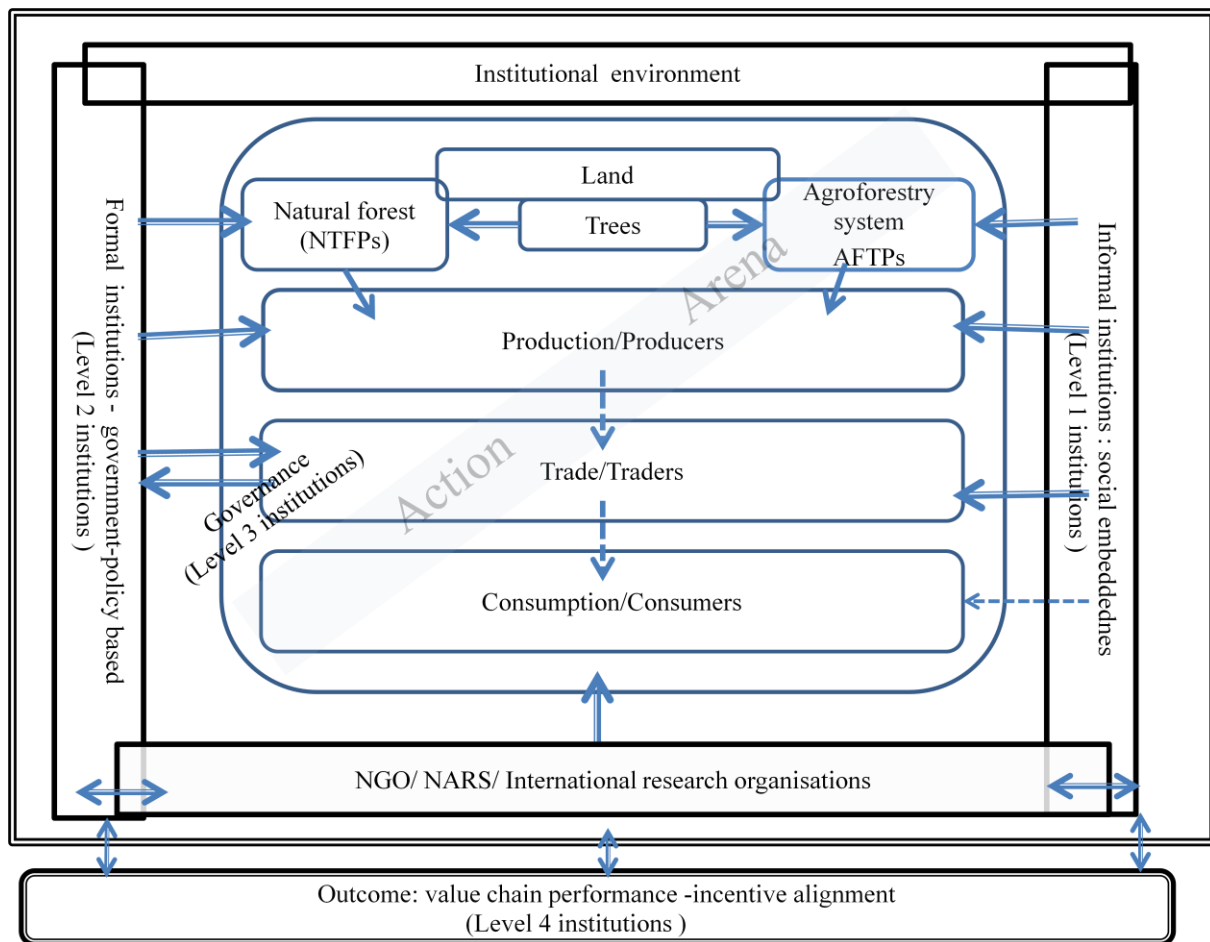


Figure 2.1: Conceptual framework indicating AFTP/NTFP value chain within Williamson's four levels of institutions

## 2.5.2 Outcome of the interaction of actors, and institutions in the value chain

To evaluate how the above interactions between actors and institutions affect performance of the value chain, it is first of all important to identify factors against which the value chain can be evaluated. This may include government policies and actors' objectives.

Different actors with varying objectives operate in a value chain. It is thus important to identify performance measures to suit the objectives of each actor (Janssen and Van Tilburg 1997; Beamon 1999; Aramyan *et al.* 2006). For a given government, the performance indicators could be the relevant agriculture, NTFP and forestry sector policies (Crawford 1997; Janssen and Van Tilburg 1997). Indicators targeted by such policies may include:

acceptable producer income obtained through reasonable prices to producers; stable income and food supply; employment creation; access to capital; positive contribution of agriculture to balance of payment; and environmental issues.

Farmers may evaluate a value chain based on the capacity of the latter to offer them higher prices for their produce, quality inputs (Crawford 1997) and a secured market outlet for their produce (Swinnen 2005). Traders may be more interested in obtaining higher profits or market share (da Silva and de Souza Filho 2007).

The Technical Centre for Agriculture and Rural Cooperation (CTA) organised an international expert workshop to identify performance/outcome indicators to evaluate agricultural science, technology and innovation systems, in the African, Caribbean and Asian countries (Daane *et al.* 2009). The findings of the workshop confirm and summarise the above mentioned indicators. Those specific to value chain performance and which may be related to valorisation and domestication of AFTP/NTFP include: growth in productivity of AFTP/NTFP and traded volumes in existing and new markets; product diversification; better organised value chain (efficient logistics, low transactions costs, high speed transactions); growth in value added; fair distribution of value added and profit margins amongst chain actors; increased competition of value chains; reduced poverty rate; and income growth resulting from innovation. On the environmental end, indicators include: conservation and enhancement of biodiversity; improved agro-ecosystems; and improved management of soil fertility.

Based on the above literature on existing performance indicators, producers' and traders' performance/outcome in the AFTP/NTFP domestication/valorisation chains in Cameroon can be evaluated based on the following indicators:

- Government of Cameroon:
  - poverty alleviation;
  - sustainable exploitation and management of natural resources
- NTFP/AFTP producers:
  - secure property rights to land and trees;
  - incentives to plant NTFP;

- increased revenue from AFTP/NTFP;
  - Traders:
- profits /net margins;
- reduced corruption; and
- reduced transaction costs.

## **2.6 Unpacking the institutions governing access and trade in AFTP/NTFP**

Figure 2.2 gives an outline of the thesis with emphasis on the specific institutions that are analysed i.e. the diagram unpacks the formal and informal institutions that were broadly defined in figure 2.1 and shows how they are treated in each chapter of the thesis. These institutions consist of political goals and rules that establish the basis for production, exchange and distribution of NTFP/AFTP in Cameroon.

Political goals are related to government strategies for poverty reduction and conservation of natural resources; they are covered in chapter four. Legal rules deal with laws to allocate and enforce property rights to trees on natural stands and on farmlands; and conditions to access permits. They are thus prerequisites to understand access rights to land and trees, and efficient interactions within the AFTP/NTFP value chain. These legal rules are thus considered as policy instruments to meet government policy aim at reducing poverty and conserving the natural resource base. The relevant policy instruments targeted by this thesis are the 1994 forestry law and its 1995 text of application, and also the 1974 Land Ordinance governing ownership and security of land.

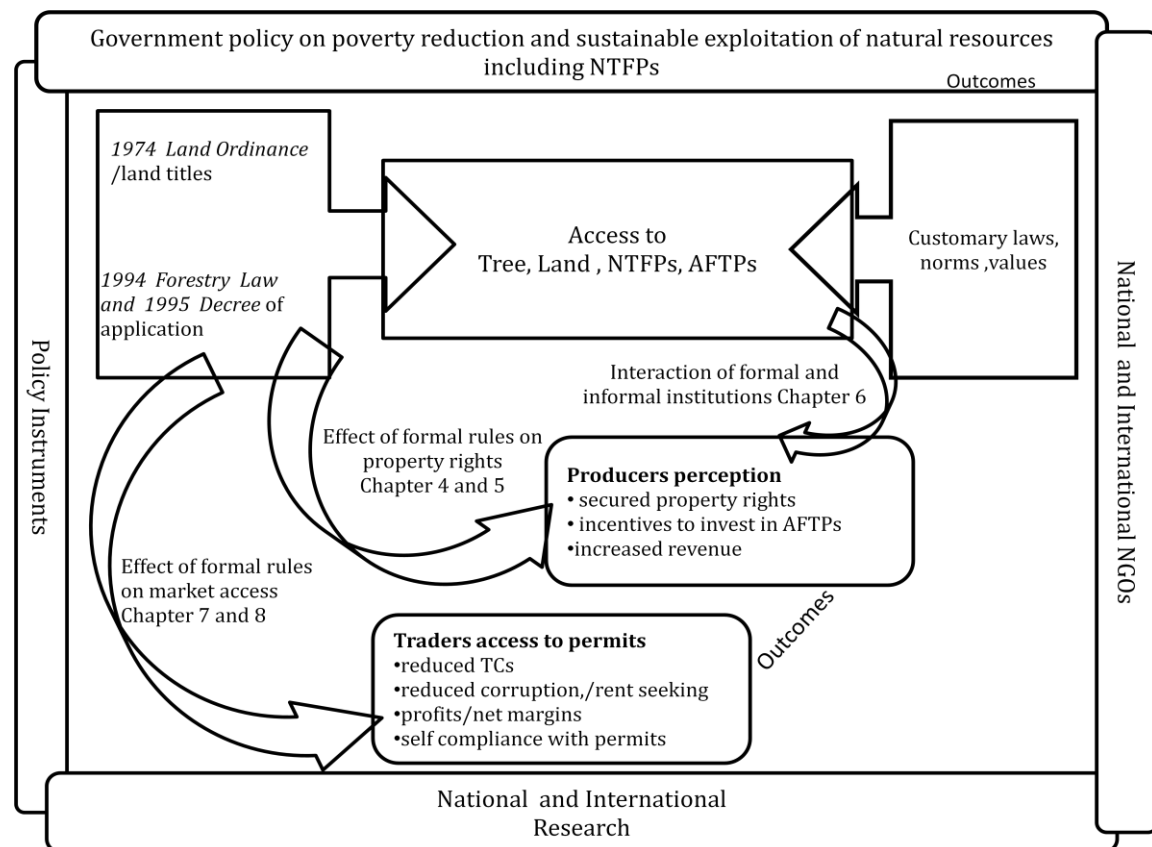


Figure 2.2: Outline of the thesis based on specific policies and institutions analysed

For producers, it is assumed that if the given policy instruments do not clearly secure property rights to land and trees, farmers will not take advantage of market opportunities, whereas transaction risks and transaction costs will increase whereby these may reduce farmers' incentives to take up new technologies (Bienabe *et al.* 2004) such as domestication and agroforestry; these are treated in chapter five. It is further supposed that farmers' perceptions of formal institutions are influenced by customary norms (Granovetter 1985) governing access to and trade in these products. The interaction of formal and informal rules in the management of land and trees are treated in chapter six. For traders, the study analyses whether access to permits as defined by the law generates corruption, high transaction costs and rent seeking behaviour. The latter are covered in chapters seven and eight.

## Research propositions

Based on the given theories, this thesis develops the propositions that the given policy and institutional environment may have two effects:

- i) an anti-development effect, whereby institutions are misused by actors in the value chain to create rents and to fan out corruption; and
- ii) a development effect whereby institutions are shaped and adopted to reduce costs and thus increase investments in NTFP/AFTP activities.

## 2.7 Summary of the theoretical and conceptual framework

In this chapter we have explored the concept of institutions and limited the definition used in this study to the one of North (1990) which refers to formal and informal rules used in the management of AFTP/NTFP including land. Coupled with this definition, the four levels of institutions as developed by Williamson (2000a) have been expanded upon. By doing this, we mentioned theories (property rights, transaction costs and cost-benefit analysis) that will be employed in different chapters to diagnose, explain and predict the effects of institutions on the performance of the AFTP/NTFP value chain.

Taking into consideration numerous actors in an AFTP/NTFP value chain (Ndoye *et al.* 1998; Belcher and Schreckenberg 2007) with varying activities and objectives, the framework identifies actors and their objectives for participating in the chain (da Silva and de Souza Filho 2007). For each of these groups of stakeholders, their objectives for participating in the chain are highlighted as indicators against which to measure performance. In the context of this study, the framework includes three main stakeholders:

- (i) Government of Cameroon is included in order to evaluate its policies for poverty reduction and forest resource conservation that affect AFTP/NTFP trade and possibly farmer's and traders behaviour and decision making in the value chain. These policies and policy instruments are theoretically analysed in chapter four.
- (ii) Producers who collect and sell NTFP and are expected to adopt agroforestry practices when value chains are conducive to production and trade. The importance of existing



institutions and policies as incentives or disincentives for farmers to exploit NTFP, domesticate them and also integrate the same species on their farms are assessed in chapters four, five and six.

- (iii) Different categories of traders are involved in the NTFP chain. In chapter seven, sources and effects of high transaction costs in the permit system are analysed as to whether they generate corruption or rent-seeking behaviours. In chapter eight, the framework attempts to investigate ways to reduce transaction costs and corruption in the NTFP value chain in Cameroon so as to increase self compliance with the law on permits.

## **Chapter**

### **3 Study Area and Research Approach**

#### **Abstract**

This chapter describes the setting, the type and sources of data required to answer the main research questions. Specifically, the geography of Cameroon is described together with the historical evolution from pre-colonial through colonial to contemporary Cameroon. All of these are helpful in understanding how formal and informal institutions interact to manage natural resources such as land and trees. The procedure to select regions, species and respondents is also described in this chapter.

### **3.1 Geography of Cameroon and development indicators**

Empirical data for this study were collected in Cameroon which is located between West and Central Africa on latitude 6 00 N and longitude 12 00 E. It has a surface area of 475,442 km<sup>2</sup> (CIA 2012). It is bounded in the north by the Republic of Chad, in the south by Equatorial Guinea, Gabon and the Congo, in the west by the Federal Republic of Nigeria and in the east by the Central African Republic (Figure 3.1).

In July, 2012 the population of the country was estimated at about 20 million with a population density of 41.6 people per km<sup>2</sup> (CIA 2012). The 2012 World Development Indicator report ranks Cameroon as a lower middle income country with a Gross National Income (GNI) per capita of 1,180 USD and an annual 2.6% growth in its Gross Domestic Product (GDP) between the years 2009-2010. About 9.6% of the population is estimated to live below the international poverty line of 1.25 USD a day. When the two USD international poverty line is considered, the number more than triples to 30.4%. About 58% of Cameroonians live in urban areas, meaning that about 42% are in rural areas. A majority of the rural population depends on the agricultural sector for their livelihoods. Natural resources contribute about 9.3% to total GDP and forests contribute about 1.8%. Agriculture constitutes 19.7% of GDP and represents 25% of the major exports of the country (CIA 2012; World Bank 2012).



Figure 3.1: Map of Cameroon and its location in Africa

Source: adapted from CIA (2012)

### 3.2 The sampling process

Taking into consideration the objectives of this study, each empirical chapter has a methodology section in which the specific research designs and data are further explained and situated within specific elaborated conceptual frameworks and economic theories. As a result, only generalities are described in this section. The data collection process was organised in two parts. The first part of the data were collected in 2011 sourcing information from NTFP/AFTP collectors/producers on formal and informal institutions governing access to land and NTFP/AFTP. These data are specifically used in chapter five and six. The second part of the data was collected in the first quarter of 2012. The latter data collection phase focused on traders and sought information about procedures required to obtain permits and

how to design optimal solutions for forestry law compliance. These data are exploited in chapters seven and eight.

The sampling process is summarised as follows:

- choice of products (based on project objectives<sup>1</sup>);
- choice of regions where the products are collected/produced and are marketed by collectors/producers;
- purposeful selection of divisions/subdivision/villages ; and
- random selection of individuals who collect/produce and sell the produce from the selected villages.

### **3.3 Agro-ecological zones and climate**

Average annual rainfall in Cameroon is estimated at 3,890 mm in the coastal lowlands with highest precipitation recorded along the slopes of Mount Cameroon (10,000 mm per year). This huge precipitation decreases to an average of 600 mm in the dry savannah region. Average daily temperatures in the southern part of Cameroon is 25° C; 21° C in the Adamawa plateau and increases to an average of 32° C in the northern regions.

Cameroon is generally referred to as an “African miniature” due to its six ecological zones, which include: coastal lowlands, humid forests, western highlands, adamawa plateau, the Benoue valley (hot tropical) and the dry savannah (semi-arid tropical). The country can be further divided into five agro-ecological zones (Takow and Ebai 1996) namely: Sudan Sahelian or the dry savannah (North and the Far north regions); Guinea savannah highlands (Adamawa, and parts of the Eastern regions), Western highlands or the humid savannah (West and the Northwest regions), Humid bimodal forest (East, Centre and the South regions) and the Humid forest monomodal zone (Southwest, Littoral and a small portion of the South regions).

About 42% (approximately 22 million ha) of land in Cameroon is covered with forests. Between the years 2000 and 2010, Cameroon lost a total of about 220,000 ha of its forests

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<sup>1</sup> Project objectives refer to the Agroforestry Tree Products for Africa (AFTP4A) funded by the Belgian Development Cooperation. The objective of the project was to develop economically viable and ecologically sound tree product value chains in order to increase producers’ participation in and benefits from tree products. This project targets four main products as listed in section 3.4. Funding for this thesis was secured through this project.

with an annual deforestation rate estimated at 0.9% (Mongabay.com 2012). The forests are exploited for lumber, timber and firewood, as well as a number of NTFP. Income generated from forest-related activities by households living around some forest communities account for almost 44% of their average annual income (Tieguhong and Nkamgnia 2012). The focus of this thesis is on NTFP. The specific species studied and their economic and cultural values are described in the next subsections.

### **3.4 Selection and description of NTFP**

Cameroon is host to an estimated 181 plant species that are regularly sold in markets and which can be classified as NTFP (Betti 2007a). A number of these species have been identified by farmers as priority or key NTFP to meet their livelihoods needs due to their high market potential and also for their food, nutritional, social and economic values. This is the case for about 30 plants classified as “key species” (Ingram and Schure 2010). These priority or key species have been the target of domestication and agroforestry development in Cameroon for close to 15 years now (Franzel *et al.* 1996; Tchoundjeu *et al.* 2006). Four species: *Ricinodendron heudelotii*, *Cola* spp, *Irvingia gabonensis* and *Gnetum* spp will be particularly studied. These four NTFP are the target of a project under the funding of which this study was executed. The biological, cultural and economic importance of these four species is described below.

#### **3.4.1 Ricinodendron**

*Ricinodendron heudelotii* commonly called njansang in Cameroon is an endemic, African tree species. It belongs to the family of Euphorbiaceae. It occurs from Senegal to East Africa and Madagascar. The tree grows fast and may reach a height of 40 m and a trunk diameter of about 120 cm. At maturity, fruits drop from the trees and are processed to obtain the kernels (Ayuka *et al.* 1999). The seeds of the fruits and the trunks are used for different purposes in the communities where they grow and beyond.

The wood of the tree is hardly used for construction, but is widely used for carving masks, spoons, cups and the production of musical instruments due to its high resonant capacity (Shiembo 1994). The roots, bark and leaves of the tree have strong medicinal properties. In

Nigeria for example, the roots are ground with pepper and salt and used as a laxative. In Gabon, the roots are used to treat blennorrhoea and painful menstruation, while in Liberia pregnant women use either the bark or the leaves as pain killers and to prevent miscarriages (Burkill 2000).

The focus of this study is on the njansang kernels. These kernels are used in Cameroon for preparing soup and a variety of dishes due to their appetizing aroma (Photo 3.1). The chemical properties of njansang have been studied by Tiki *et al.* (2000). They report that the kernels are rich in fatty acids and essential oils (49.2 to 63.5%) and proteins (49.9 to 65.2 %) and low in carbohydrates (4.9 to 6.4 %).



Photo 3.1: Njansang kernels

Source: author

Annual trade and consumption of njansang in Cameroon is estimated at 730,325 USD (Ingram and Schure 2010). The produce is traded both within and outside Cameroon. In 2007, out of a total of 75 households interviewed in Yaounde, 70% consumed njansang at least three times a week. Based on Manirakiza (2007), annual consumption of njansang for Yaounde alone can be estimated at 735 tons. Nigeria is one of Cameroon's biggest export destinations. In 2003, a total of about 1,300 tons of njansang were exported to Nigeria (Ayeni *et al.* 2003). With an increasing African diaspora in Europe and America, trade in njansang is progressing. The only available data shows that a total of about 4 tons of njansang were exported to

Europe in 1998 (Tabuna 1999). Besides providing income to producers, commercialisation of the species provides employment to about 1,120 Cameroonians most of whom are women (Ndoye *et al.* 1998).

### 3.4.2 Kolanuts

Kola is a tropical tree that belongs to the family of Sterculiaceae. About 125 species of kolanuts are known to exist and many of them are cultivated. The kolanut tree is evergreen and grows to a height of about 25-30m. Three species: *Cola anomala*, *acuminata* and *nitida* are common in Cameroon. They are distinguished by the number of cotyledons. *C. nitida* has two cotyledons while *C. acuminata* and *C. anomala* have between 3 and 7 (Tachie-Obeng and Brown 2004). The species of concern treated in this thesis is *C. anomala* that grows in the western highlands of Cameroon (Photo 3.2).

Kolanuts are reported to contain the following: 13.5% water, 9.5 %t crude protein, 1.4 % fat, 45 % sugar and starch, 7.0 % cellulose, 3.8 %t tannin and 3 % ash. It is also rich in caffeine and theobromine (Purseglove 1968). Its caffeine content is apparently higher compared to that of cocoa and coffee (Moloney 1887, cited by Obeng and Brown 1994).

Kolanuts are consumed in West and Central Africa as a masticator to counteract fatigue and to curb thirst and hunger. It is also understood to boost intellectual capacity (Tachie-Obeng and Brown 2004). These properties may explain why kolanuts chewing has become very popular among students, drivers and many other consumers who need to stay active for abnormally long hours (Jayeola 2001). Its industrial uses date back to the seventies and early eighties. During this time, kolanuts extracts were used for the production of varied cola soft drinks (Beatie 1970). Kolanuts were also used in the pharmaceutical industry as a source of caffeine and essential oils (Oluonloyo 1979). In the confectionary industry, it was used in the production of heat-resistant chocolate bars (Williams 1979). Furthermore, kolanuts are reputed for assisting in weight loss (Blades 2000).

The disappearance of kolanuts from current industrial use may explain the absence of current literature on this species. It is one of the few indigenous African cash crops that have not yet attracted international sympathy to improve production. As a consequence, it is often referred



to as an orphan crop (Asogwa *et al.* 2008). However its high medicinal and cultural values make it a priority agricultural species in most African countries. For example, *C. nitida* can be used as a natural fertility regulator because the stem bark extract inhibits the release of luteinizing hormones (LH) from pituitary cells (Benie *et al.* 1987). Other medicinal properties of the species can be found in the stems, leaves, twigs, flowers, fruit follicles and the bark of *C. nitida*, *C. anomala* and *C. acuminata*. They can be used in the production of concoctions to remedy dysentery, coughs, diarrhea, vomiting, etc (Benie *et al.* 1987).



Photo 3.2: Kolanuts parcelled in baskets

Source: author

One of the greatest attributes of kolanuts is their socio-cultural importance. In Cameroon for example, it is offered in birth, naming and death ceremonies as well as for the acknowledgment of appreciation to visitors (Mbile *et al.* 2004). It is also shared to demonstrate peace and agreement after settling disputes between conflicting parties. Due to its high cultural value some communities in the Northwest region of Cameroon have put

special rules to preserve the species by attaching significant financial sums before the tree is felled after prior authorization from local authorities (Foundjem-Tita 2009).

Based on FAOSTAT (2012), total kolanuts production in Cameroon today is estimated at 38,000 tons. Other FAO statistics show that exports of kolanuts out of Cameroon reached their highest ever in 1984 when 583 tons were exported. Recent data estimate exports of kolanuts at about 87 tons per year. These data suggest that almost all kolanuts produced in Cameroon are consumed within the country. Very little is imported as figures from the same source show that in 2006 about 3 tons were imported into Cameroon with the highest ever of 1,020 tons worth 165,000 U.S. dollars recorded in 1978 (FAOSTAT 2012). These figures reveal the strong domestic market potential of kola, chiefly due to its cultural value.

### 3.4.3 Gnetum

The name of *Gnetum* spp in this study refers to two evergreen, leafy vines i.e. *Gnetum africanum* and *Gnetum. buchholzianum* that grow throughout the Congo basin (Photo 3.3). They survive in forests openings, secondary forests, and fallow farmlands; at times they occur in active, mixed cropping fields. The vines may grow up to a height of 10 m. The two species are superficially very similar, but differ in leaf shape and reproductive organs (Clark *et al.* 2004).

In most cases, the leaves are sliced into small pieces, cooked and consumed as vegetables. They accompany the intake of starchy food stuffs, particularly from cassava. These vegetables are rich in proteins, essential amino acids and mineral elements. They are distinctively rich in sodium, potassium, calcium, magnesium and iron (Okafor *et al.* 1994). Their high nutritional value makes them a good substitute for meat in many households. In Nigeria, the leaves are occasionally distilled into alcohol (Nkefor *et al.* 2000). In addition to nutrition, they are also used as medicines to treat infections such as haemorrhoids and high blood pressure (Okafor 1997; Schippers 2000). The leaves are also used as an antiseptic on wounds and are believed to enhance blood production (Nkefor *et al.* 2000).

Estimates of national production of *Gnetum* are scarce. However, survey results reported by Ingram *et al.* (2012) show that 18 villages in Cameroon harvested a total of 2,324 ton of

*Gnetum* annually between 2007-2009. Of this volume, 83% was sold whereas the remaining 17% was either consumed (11%) and the rest were given out as gifts or left to deteriorate (6%). The same study estimated annual trade between Cameroon and Nigeria, based on three sea routes in the Southwest region of Cameroon, to be 3,518 tons worth about 10.5 million US dollars. Analysis of the value chain from two regions in Cameroon shows that the sector directly employs about 2,150 people while another 400 people are indirectly employed. Unsustainable harvesting practices and low rates of adoption of domestication techniques have resulted to *Gnetum* being classified as an endangered species by the Government of Cameroon (Clark *et al.* 2004).



Photo 3.3: *Gnetum* spp

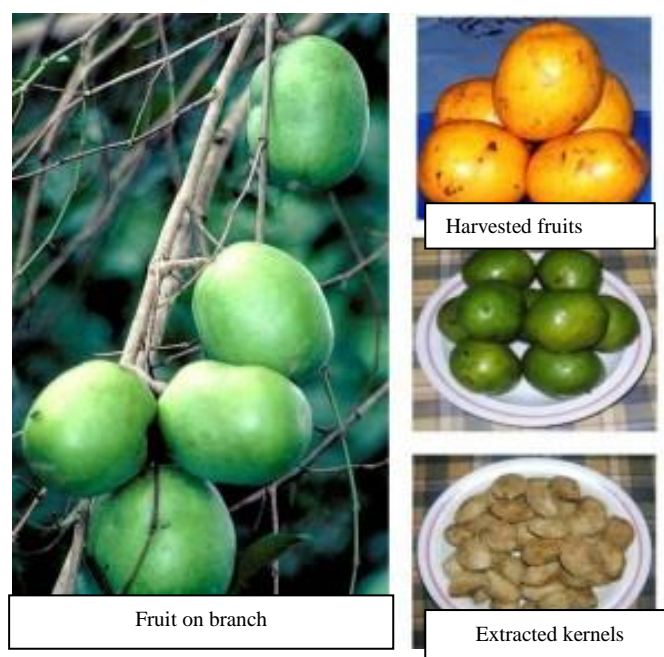
Source <http://www.google.be/search?q=Gnetum+spp&hl>

### 3.4.4 Irvingia (Bush Mango)

*Irvingia gabonensis* and *I. wombolu* are two species of the Irvingiaceae family. They are common in the humid forest zone of Cameroon. Both species are difficult to distinguish from herbarium specimens alone. Most of the time, they are distinguished based on palatability of the fruits (Harris 1996). The sweet edible pulp of the fresh fruit of *I. gabonensis* is consumed while the sweet-bitter taste of the pulp of *I. wombolu* fruit makes it inedible. The two species can be found in the humid forests of Central and West Africa. They are planted and maintained in farms and home gardens in most areas where they occur (Ainge and Brown 2004).

The juicy fruit of *I. gabonensis* is rich in vitamin C and is often consumed as a dessert. The pulp can be used in making jam, jelly and juice (Ejiofor 1994). The nut of both species is cracked to obtain the kernel. The kernels are used as a soup thickener and in some cases as substitute to groundnuts and melon seeds ('egussi') in soup. They are highly appreciated for their slimy consistency in soup. The kernels of *Irvingia* spp. are classed as oil seeds (Leakey and Newton 1994) and provide carbohydrates and proteins to their consumers (Onyeike et al. 1995, cited in Ainge *et al.*, 2004). The kernels have also been reported to have uses in the cosmetic, confectionary and pharmaceutical industries. The kernels are specifically described to contribute to body weight loss in humans (Ngondi *et al.* 2005; Egras *et al.* 2011).

*Irvingia* spp are an important source of cash income to farmers and traders in the humid forest zone of Cameroon. Their annual production value is estimated at 8,089,580 USD. Annual production of *Irvingia* spp from the Ejagham forest reserve for example is estimated at 154,989 tons (Nkwatoh *et al.* 2010).



**Photo 3.4: *Irvingia* spp:**

Source: <http://www.google.be/search?q=irvingia+gabonensis+picture&hl=en&tbo>

## **3.5 Criteria for choosing case study subjects: regions, villages and respondents**

### **3.5.1 Choice of regions**

Because of differences in biophysical conditions, and ecology between different regions of Cameroon and growth requirements, the selected species grow abundantly in some of the regions and are completely absent from others. In other cases, some of the species may be available in one area but are not considered important by the local people. As a consequence, it was difficult to find a species that was abundant as well as important for collection and sale in all the regions of the country. In this respect, a different species was considered in each of the selected regions. Only regions where the species grow and farmers are actively involved in collection and trade were selected.

*Choice of regions: based on pre-colonial, colonial history, and traditional forms of leadership*

To capture the first level of Williamson's institutional analysis framework (Williamson 2000a), we go down to the layers of institutions from pre-colonial, colonial and contemporary Cameroon. This is in conformity with the thought that the particular history of Africa which dates back to the pre-colonial times and the manner in which its institutional environment has been shaped over the years, may help in understanding present weaknesses in African institutions and development (Platteau 2009).

Besides using species occurrence, as a choice criterion, regions were therefore selected in order to capture the cultural and historical diversity of Cameroon. Before colonisation, different ethnic groups had migrated to and settled in the country. Most of these ethnic clusters have the same origin but different lifestyles due to different initial dwelling places. As they settled, they created cultures which today affect the way they manage natural resources, especially land and trees (ADB 2009).

Before the colonial period, the people of Cameroon were divided into three categories based on the local systems of government (Yahmed *et al.* 2006). These include:

- People with a *hierarchical system of government* which today refers to people of the North West, West, parts of Adamawa, North and Extreme North regions of Cameroon.
- People with a *decentralised system of government*. This concerns people from the forest zones (South, Centre and Eastern regions).
- People with a *mixed system of government* characterised by western cultures. This groups people from the coastal zones (Littoral and South West regions).

Cameroon has experienced German, French and English colonial rules. Before the Germans colonised the country in 1884, the Baka and Fulani ethnic groups were the first to settle there. After the First World War in 1919, the country was divided between the French and the English. In 1960, the French part of Cameroon gained independence as the Republic of Cameroon. In the following year, the English part also gained independence and voted to join the French Cameroon through a Federal State. In 1972, through a new constitution, the federation was replaced by a unitary state called the United Republic of Cameroon. The country was again changed from the United Republic of Cameroon to the Republic of Cameroon in 1984 (United Nations 2004; CIA 2012).

About 200 ethnic groups can be counted in Cameroon, each of which has its own dialect, culture, and tradition. Administratively, the country is divided into 10 regions (Figure 3.2). Two of these regions (Northwest and Southwest) were colonised by the English and the rest by the French. With respect to its colonial history, the state has two official languages i.e. English and French.

The people of Cameroon are thus characterised by different cultures and speak different local and international languages which have been influenced by both colonial and modern political systems. The importance of cultural diversity is to study the interaction between formal and informal institutions in the management of natural resources.

Based on the above, the choice of regions was purposeful and guided by the following criteria:

- occurrence and abundance of at least one of the selected case study species either in the wild or on farmland;
- farmers in the regions market the species; and
- cultural and political diversity.



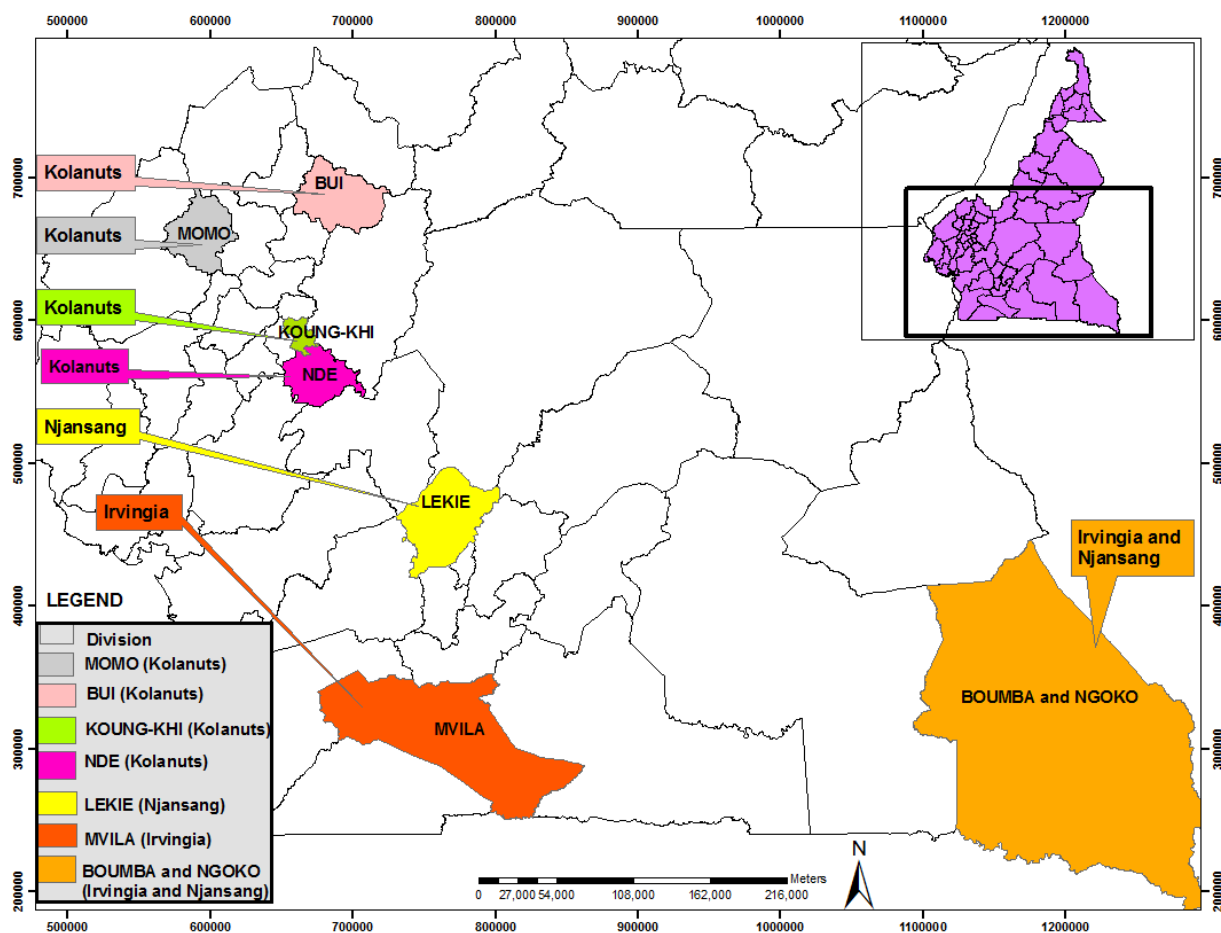


Figure 3.2: Map of Cameroon indicating study sites and products selected per site

Source: Ngakum Precilia and author

For each selected region, divisions/subdivision, villages were chosen based on expert and local knowledge about abundance, distribution and use of the species. In this case, local NGO assistance was crucial in guiding the choice of sites. These local NGOs are basically those which have been working with the World Agroforestry Centre (ICRAF) to either domesticate or valorise the selected species in each selected region.

### **3.5.2 Choice of respondents**

#### *Producers*

Individuals were chosen from each selected village for interview. The choice of respondents was random after having purposively established a list of those farmers who are actively involved in the collection/harvest and marketing of the selected species. By doing so, the chances of interviewing farmers who are not involved in the collection and commercialisation of the species were eliminated.

Table 3.1 gives a summary of the sampling plan and number of producers interviewed per species and per region.



Table 3.1: Summary of sampling frame indicating sites and species selected for producers survey

Research Questions	Selected regions <sup>a</sup>	Form of leadership and colonial history	Divisions/ subdivision <sup>b</sup>	Species <sup>c</sup>	Villages	Number of respondents/region <sup>d</sup>
<p>Research questions 1 to 3 targeted to producers</p> <p>Formal and informal institutions governing access to land and trees</p>	North West	Hierarchical English	Momo, Bui	Kolanuts	Random sampling from a list proposed by local NGOs. Most important criteria being resource abundance and marketing activities	99
	West	Hierarchal French	Nde, Bayangam	Kolanuts		99
	Centre	Decentralised French	Lekie	Njansang		51
	South	Decentralised French	Mvila	Irvingia/Njansang		69
	East	Decentralised French	Yokadouma	Irvingia/Njansang		76
Total						394

Note

- Purposeful: only regions where species grow are selected
- Purposeful sampling of regions where species grow based on available literature and presence of a local NGO to ease access to the area
- Purposeful sampling: species targeted by domestication and may be collected from the wild or harvested on farm (N/B *Gnetum* spp was not part of the producers survey)
- Random sampling: from a list of farmers actually involved in harvesting/collecting and marketing

### 3.5.3 Traders and markets

Traders were selected in some export, urban and local assembly markets. Due to their high mobility and often busy nature, traders' participation was most of the time based on availability and willingness to take part in the interview (Table 3.2).

Table 3.2: Markets visited during traders' surveys

Research Question	Species	Selected Markets	Number of respondents per species
Research question 4 Institutional arrangements related to permits Targeted to traders	<i>Gnetum spp</i>	Idenua, Bota waft, Tiko port, Bamenda, Douala	21
	<i>Irvingia spp</i>	Ebolowa	22
	<i>Cola spp</i>	Ashong, Bafoussam	18
	<i>Ricinodenron heudelotii</i>	Yaounde, Douala, Bafoussam	9
			Total = 70

N/B Please contact author at: [dftita@yahoo.com](mailto:dftita@yahoo.com) for the questionnaires and data if required. The questionnaire and data will subsequently be made available online at: <http://dvn.iq.harvard.edu/dvn/dv/icraf>

## Chapter

# 4 Policy and Legal Frameworks Governing Trees: Incentives or Disincentives for Smallholder Tree Planting Decisions in Cameroon?

### Abstract

Agroforestry and planting trees on farmers' fields have been reported as important elements in a strategy to meet the millennium development goals of poverty reduction and climate change mitigation. However, their uptake seems to be constrained by factors both internal and external to the household and often related to the policy and legislative environment. In this chapter, we use qualitative content analyses to examine whether existing policies and legislation governing trees in Cameroon support or discourage tree planting. We found that although their mission papers and statements suggest that most national government policies related to agricultural, forestry and general poverty reduction sectors address tree planting and agroforestry, actual legislation designed to follow up the policies mostly contradicts poverty reduction goals. Often legislation and regulations are more conservation-oriented and do not provide a clear procedure to distinguish between products from trees found in the wild and those gathered from farmers' fields. We found out that there is no government program or strategy specific to guide agroforestry development in Cameroon and thus recommend for such a scheme to be put in place.

**Keywords:** agroforestry, poverty reduction, millennium development goals, ecosystem services, policies and legislation

This chapter is based on:

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## 4.1 Introduction

It has been recognized that agroforestry technologies can contribute significantly to the achievement of the Millennium Development Goals (MDG) (Garrity 2004) at the core of which is eradicating extreme poverty (Schreckenberg *et al.* 2006a). These technologies can, amongst others be used in rehabilitating degraded land (Asaah *et al.* 2011). Furthermore, agroforestry is gaining recognition in the climate change debate (Garrity 2004; Robiglio *et al.* 2010). For example, scientists in ASB (Alternatives to Slash and Burn Partnership for the Tropical Forest Margins) argue for a whole landscape approach – i.e. *Reducing Emissions from all Land Uses* (REALU) – as the most appropriate move towards reducing carbon emissions and providing financial co-benefits to local populations (Robiglio *et al.* 2010). However, when trees are concerned, much emphasis is still placed on forests (mostly natural regeneration), while it has been reported that even though forests are being severely degraded, the number of trees on farms is increasing. About 1.2 billion people are using agroforestry technologies (FAO 2005) to integrate trees into their production systems. In addition a recent global assessment of tree cover reveals that 48% of the Worlds agricultural land had at least 10% of tree cover. These figures demonstrate the importance of trees on-farm in the provision of environmental services.

Integrating trees on farms and rangeland is within the concept of *agroforestry* and targets diversification and increased sustainability of agricultural production for increased social, economic and environmental benefits (Leakey 2011). As mentioned in the introduction of this thesis, the focus in this chapter is on indigenous fruit trees and farmers' fields, although reference will be made in some cases to tree planting in general. The main reason is that the principal actors who can create a positive contribution to tree planting are farmers (Westergren 1996) whereby their on-farm tree planting decisions are influenced by the market, food, medicinal, cultural and other social values of the tree species they would choose to plant (Westergren 1996; Garen *et al.* 2009).

Despite the social, economic and cultural importance of trees and especially indigenous species on farms (Schreckenberg *et al.* 2006a), they are poorly addressed in existing government policies dealing with poverty reduction (Schreckenberg *et al.* 2006b). In addition, research on agroforestry policies that include indigenous species is scarce. Consequently,

most countries do not have policies that govern these trees on farmland, nor do they specify how to deal with products from on-farm tree plantations. Typically, these policies only pay attention to exotic species such as mangoes, avocados and citrus (Schreckenberg *et al.* 2006b), and other export cash crops such as rubber and cocoa. On the other hand, trees on farmland, especially indigenous species, are subjected to policies and regulations from the forestry sector which are often highly normative (Westergren 1996; Schreckenberg *et al.* 2006a; Laird *et al.* 2010b; Ndoye and Awono 2010). This has motivated the World Agroforestry Centre to encourage countries to develop specific agroforestry policies as was discussed during the 23<sup>rd</sup> World Congress of the International Union of Forestry Research Organisations (Langford 2010). Leakey *et al.* (2005) made similar recommendations. Some African countries, including Kenya, have taken the lead to develop special regulations for farm forestry (Government of Kenya 2009). Furthermore, FAO is interested in developing guidelines aimed at encouraging national decision makers to promote agroforestry.

The development of agroforestry measures is not only limited to Africa. For example, the European Union (EU) under regulation 2080/92 developed on-farm forestry measures with specific programs to support afforestation activities, to improve existing woodlands and to reoccupy marginal lands by planting trees. Even though the EU's principal objective is to reduce agricultural overproduction, it also recognises the contribution of forestry resources in providing greater ecological balance and combating greenhouse gas effects by absorbing carbon (Lawson *et al.* 2002).

In the case of Cameroon, the justification to develop specific policies and legislation that address trees and especially indigenous fruit trees on farms is that many AFTP produced by smallholders on-farm are from indigenous tree species whereas these species are also found in the wild. For example, Degrande *et al.* (2006) found that 52% of a total of 9,202 trees inventoried on farmers' fields in the humid forest zone of Cameroon were indigenous; 73% of the 73 farmers interviewed were shown would prefer to plant indigenous fruit trees compared to exotics. However, legislation and regulation governing trees in Cameroon are enshrined within the 1994 forestry law and its 1995 text of application (Ngwasiri *et al.* 2002). This law, for the most part deals with indigenous species that farmers plant on their farms. Hence, there exists a clear need to make a comprehensible distinction between the same products from trees found in the wild and on farmers' fields. However, new policy and legislative initiatives cannot be taken without a clear understanding of how existing policies may affect farmers'

decisions to plant trees on-farm. In this regard, the main objective of this chapter is to answer research question one, i.e what policies/strategies currently exist to address tree planting in Cameroon and whether these policies and regulations have any unintended consequences on agroforestry development in the country?

The study is designed to contribute to the current process of formulating specific public policies, legislation and regulations to govern the agroforestry sub-sector in Cameroon and other countries.

## **4.2 Conceptual framework for understanding farmers' tree planting decisions**

The conceptual model applied examines factors that may affect farmers' tree planting decisions and explains why incentive-driven policies may add an additional impetus for tree planting (Figures 4.1 and 4.2). At the centre of the framework is the outcome: the rational-strategic decision of farmers to plant trees based on the highest expected, individual benefits and lowest cost. The model depicts that the decision to plant trees is influenced by a number of factors that are either internal or external (the environment) to the household. Within the household, age of the household head, number of adult males, overall level of education of the farmer and amount of land owned are reported to influence the decision to plant trees (Knox *et al.* 2002; Zubair and Garforth 2006). Factors external to the household that may trigger tree planting decisions include presence/absence of market opportunities for AFTP, ecological and technical factors, and the opportunity cost of tree planting. Indeed, farmers would plant more trees if the opportunity cost of forgone benefits on the land used were lower than the benefits derived from planting trees.

Rational farmers do not operate in a vacuum. Their activities are conditioned by a set of norms, rules and regulations defined as 'institutions' (North 1990) (see Chapter 2). This means that the decision of a rational farmer to plant trees on a given piece of land is not only influenced by the highest expected utility, but also by what is possible within a given *institutional environment* comprising government policies and a conducive legal framework (both formal and informal). The policy and legal framework in this study refers to the whole

set of political strategy or vision and regulations that establish the basis of production, exchange and distribution of trees and tree products in Cameroon (see Chapter two).

As shown in Figure 4.1, the household's internal, ecological and economic factors, and incentive-oriented policies act directly, while those related to formal and informal rules and regulations may work both directly and indirectly. Direct, incentive-oriented policies such as improving AFTP quality through provision of high quality planting material, renewing aging plantations through tree domestication and vegetative propagation, and paying for environmental services may encourage farmers to plant trees. Without incentive-oriented policies, a rational farmer with a particular plot size will plant a given number of trees, say  $Q_1$  (Figure 4.2), to meet his/her personal, economic, cultural and ecological needs. This rational decision will take into consideration the potential alternative benefits from planting other types of plants to meet other economic and social needs. The marginal benefits ( $MB_1$ ) of planting one additional tree on any given piece of land decrease as more trees are planted. A farmer will thus compare the benefits of planting one extra tree to the benefits he will forego (opportunity cost of tree planting) by not planting another plant type on this land. Thus, farmers may plant more trees as long as the marginal benefits from doing so exceed marginal costs of not planting another plant type ( $MC_1$ ). For farmers to plant  $Q_2$  trees, it is argued that there should exist additional motivating factors beyond what they may obtain from their individual benefits. It is suggested that this additional stimulus may come from incentive-oriented policies which may include society's willingness to pay for environmental services, provision of an adequate number of well-trained nursery operators to supply seedlings of high yielding tree species at affordable prices, or increase the value of indigenous fruit tree products through improved marketing. These incentive-oriented policies are expected to increase the competitiveness of indigenous fruit trees with regards to other plant species and will thus shift the marginal benefits to  $MB_2$ .

The rational farmer's choice is conditioned by policies and regulations governing the agroforestry sector. This means that, depending on the way the policies and regulations are drafted, they may provide any combination of incentives, disincentives, sanctions or information to promote a particular type of behaviour (North 1990; Doward and Omamo 2009). In the context of this study, these institutions may be both formal and informal legislation and regulations that influence farmers' decisions to plant trees through their control on farmers' perceived (secured) property rights to land, trees and tree products (see

Chapter two). In the absence of clear property rights with regards to access to land and tree products, farmers will not take advantage of market opportunities. Also, in the absence of an adequate policy framework, transaction risks and costs will be high (Bienabe *et al.* 2004). This may further reduce farmers' and traders' motivation to plant and market trees and tree products. This means that if property rights (use and economic rights) to trees and tree products are supportive, they may also contribute to making on-farm tree planting more competitive, thus pushing the marginal benefits to  $MB_2$ . Otherwise, poorly defined rights may serve as a disincentive to on-farm tree planting, thereby pushing the marginal costs to  $MC_2$  leading to less trees on farm ( $Q_3$ ).



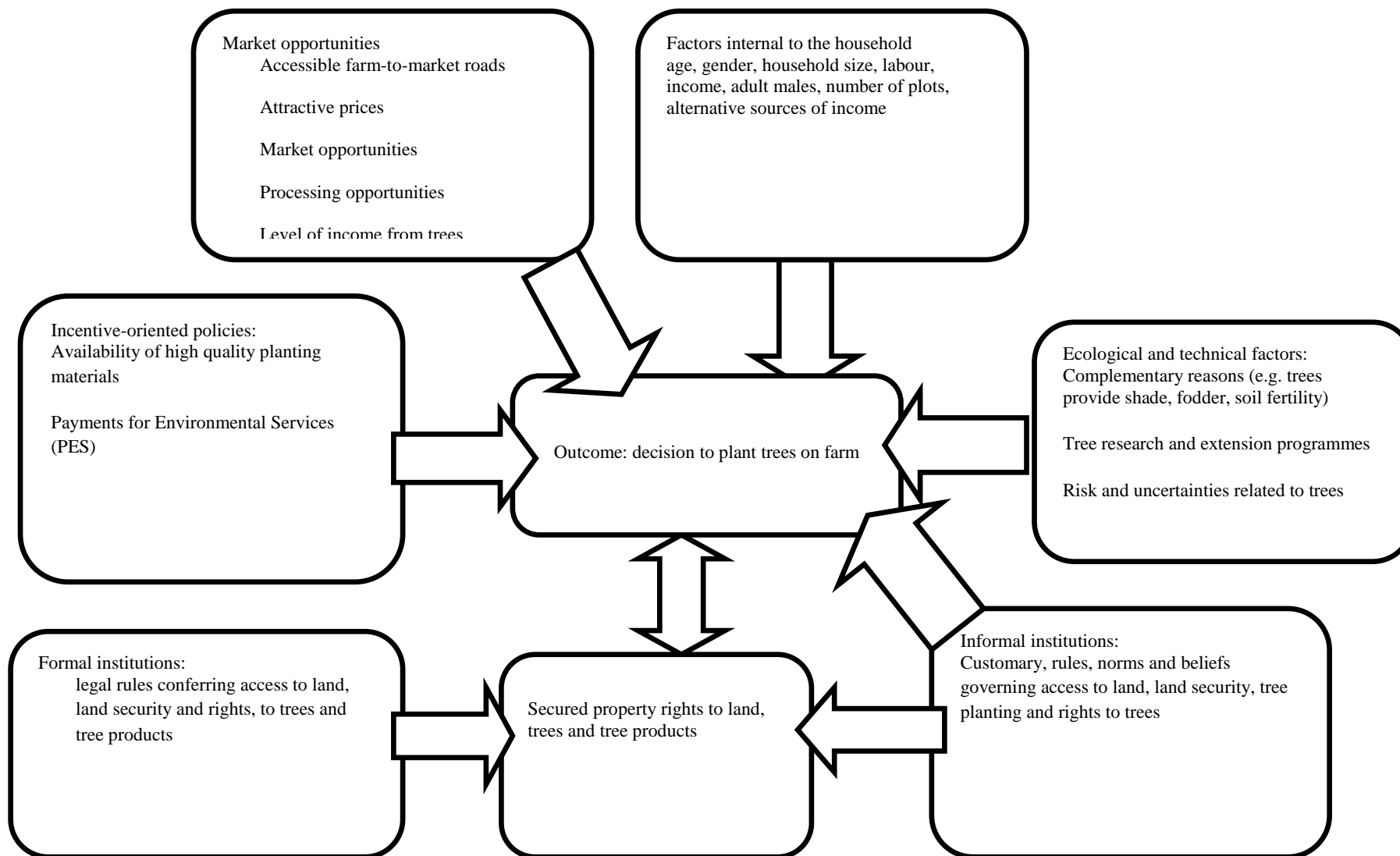


Figure 4.1: Conceptual framework for analysing farmers' tree planting decisions

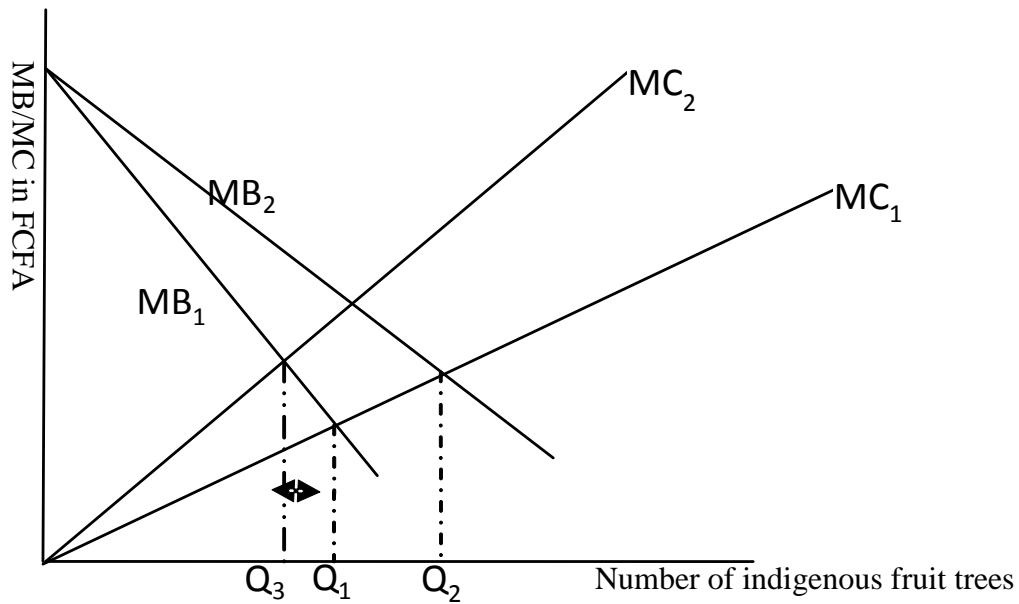


Figure 4.2: Effect of incentive-oriented policies on the number of trees planted

MB = marginal benefits; MC = marginal costs, Q = number of trees and FCFA = currency used in Central Africa and stand for 'Fédérations des Communautés Francophone et Acadienne'. 1 € = 650 FCFA

### 4.3 Research method

A qualitative content analysis was performed on policy statements, legislation and regulations of the responsible ministries and departments in the agricultural, forestry and environmental sectors in Cameroon. Content analysis is defined as a technique for determining meaning by objectively and systematically identifying specified characteristics of messages (Holsti 1969). The methodological procedure is based on Stemler (2001), Mayers and Bass (2004b) and Dlamini (2007), and is detailed as follows:

**Step 1:** inventory of existing national strategic documents, mission statements of relevant ministries in charge of forestry, environment, agriculture and rural development in order to select relevant policy statements, laws and official texts that relate to trees, forests, environment and farmers' livelihoods that may either encourage or discourage tree planting on farmers' fields and other agroforestry initiatives (see Table 4.1 for list of documents analysed).

Table 4.1: National policies or programs relevant to poverty and rural development in Cameroon

National policy or program	Mentions elements of NTFP <sup>a</sup> or AFTP <sup>b</sup>	Extent integration of trees on farm is addressed <sup>c</sup>
Poverty reduction strategic paper (PRSP) – (August, 2003)	Yes	1
Growth and employment strategic paper (GESP) – (August, 2009)	Yes	1
Rural development strategic paper (RDSP)-(undated)	Yes	2
Forest and environment sector program (PSFE) – (Dec, 2003)	Yes	0
National forestry policy – (June, 1995)	Yes	2
National agricultural policy – (May, 1999)	No	0
National NTFP policy (mission statement)	n/a	n/a

a. Non-Timber Forest Products

b. Agroforestry Tree Products

c. 0: not at all addressed; 1: inadequately addressed; 2: adequately addressed; n/a: not available.

**Step 2:** although word frequency count is widely used in content analyses, the more advanced method used here condenses a great number of words of text into fewer content categories based on precise coding rules (Stemler 2001). The justification is that for stylistic reasons, synonyms of some words may be used and this may lead to an under-estimation of some concepts if only specific words are counted. To overcome this problem, a more contextual approach to the meaning of some keywords is used. The context is whether the policy or legal statement serves as incentives or disincentives to tree planting. The keywords adopted here were: NTFP, agroforestry, trees, farms, conservation, sustainable management, planting materials, tree domestication, marketing and indigenous species. Based on this precept, a matrix of the selected policies and texts has been built to explore if the policy statements and legal text mention promoting NTFP or AFTP which could be interpreted as incentives for tree planting, or else directly discourage tree planting. A binary attribute of *yes* or *no* was used. If the policy is positively labelled through a *yes*, then another column within the matrix investigates if the issue of tree planting is adequately or inadequately addressed (see Table 4.1). An issue is:

- adequately addressed, if the policy document or mission statement mentions and elaborates on action plans and implementation strategies regarding agroforestry, tree domestication and integration of trees on farm, and is then labelled 2;

- inadequately addressed implies the policy document or mission statement just mentions agroforestry and tree planting without further details on any implementation strategy, and is labelled 1;
- not at all addressed if the policy document does not treat or include any element related to the integration of trees on farm, and is labelled 0.

**Step 3:** the analyses have been designed to investigate which components of tree planting on farmers' fields and domestication of indigenous species and agroforestry are adequately or inadequately addressed. To do this, the policies and mission statements that received a *yes* (in matrix 1) were later scored again via another matrix. At this stage, the criteria of analyses modified and used elements of policy recommendations, emerging from the works of several authors including Westergren (1996), Ndoye *et al.* (1998), Garrity (2004), Russell and Franzel (2004), Simons and Leakey (2004), Degrande *et al.* (2006), Schreckenberg *et al.* (2006b), Tchoundjeu *et al.* (2006) and Garen *et al.* (2009) geared at including agroforestry, AFTP, indigenous fruits and NTFP in combating hunger and poverty (MDG 1). The policy recommendations are also aimed at meeting Cameroon's poverty reduction strategic paper (PRSP), the growth and employment strategy and other climate change mitigation issues. Some elements that are of policy advice (e.g. institutional support to improve market infrastructure) may extend to other sectors. For that reason, analyses concentrated on those specific to the AFTP or NTFP subsectors. The elements of policy recommendation adopted are listed into four groups below.

#### *Production and sustainable management*

- A. The policy and legislation addresses production and distribution of planting materials of indigenous NTFP or AFTP.
- B. The policy and legislation encourages integration of trees on farm.

#### *Access, harvest and post-harvest*

- C. The policy and legislation gives usufruct rights to farmers.
- D. The policy and legislation addresses harvest and post-harvest technologies.
- E. The policy and legislation addresses sustainable management exploitation, production and/or domestication of indigenous species from the wild.

#### *Marketing*

- F. The policy and legislation confers economic rights to farmers.

G. The policy and legislation encourages marketing activities, farmer enterprises or research on marketing of indigenous tree products.

*Research and extension*

H. The policy and legislation or organisation addresses research on agroforestry and/or domestication of indigenous species.

I. The policy and legislation or organisation provides or makes provision for agroforestry incentives, access to planting material and/or extension services on tree planting.

**Step 4:** inconsistencies are highlighted in the policy and legal documents in relation to meeting national development goals (poverty reduction strategic paper) and international development goals (specifically MDG1: poverty and hunger) and also general climate change mitigation objectives.

## **4.4 Results**

The various government policies, legislation and regulations are presented and evaluated in this section with a focus on their impact on farmers' tree-planting decisions. Results are then discussed, followed by conclusions and policy implications.

### **4.4.1 Analysis of policy statements**

Analysis of the major government policy documents related to agricultural development, forestry and poverty alleviation reveals the commitment of the Government of Cameroon (GOC) to include elements of NTFP and AFTP in its natural resources management and poverty reduction policies. This commitment is manifested in the country's 2003 Poverty Reduction Strategic Paper (PRSP), the 2008 Growth and Employment Strategic Paper (GESP) which replaced the previous PRSP, the Rural Development Strategic Paper (RDSP) and the National Forestry Policy (Table 4.2).

In all these documents, the GOC identifies managing natural resources in a sustainable way as one of the four pillars to diversify and raise income in rural areas. Of these documents, the Rural Development Strategic Paper and the National Forestry Policy rate highest in addressing agroforestry through on-farm integration of indigenous species as one of the options to support farming development, in order to boost production, diversify rural income

and maintain the natural resource base (Table 4.2). These two policy documents also emphasise the importance of promoting agroforestry-based production systems by integrating trees on-farm to improve soil fertility.

The national agricultural policy does not use the agroforestry terminology but elaborates on the development of some major cash crops (coffee, cocoa, rubber, oil palm) designed for promoting exports in the national agricultural diversification strategy. Although these efforts again reflect the intent of the GOC to include trees, AFTP and related agroforestry technologies in its poverty reduction strategy, it should be noted that the national agricultural policy neglects indigenous species which are targets for tree domestication and confirms common opinion that these species are overlooked by the ministry in charge of agricultural development. Unlike for other crops such as maize, cotton, rubber, roots and tubers, cocoa, coffee and sugarcane, for which specific directives exist in the national agricultural policy, no directives exist for indigenous fruit species in general and those studied in this thesis in particular, i.e. *Irvingia gabonensis* (bush mango), *Dacryodes edulis* (safou) or *Ricinodendron heudelotii* (njansang). The assumption of this is that, in the absence of appropriate policies from the agriculture ministry, indigenous fruits species are in reality highly regulated by the forestry department.

Both national forestry policy and its institutional support instrument, the PSFE, address most of the elements of policy recommendations identified from existing literature. However, Table 4.2 reveals that efforts are still needed to tackle the availability, accessibility and affordability of improved planting materials for indigenous trees.

Table 4.2: Scoring matrix for relevant policies in relation to trees on farm

Policy/Organisation/Legislation of sector relevant policies	A	B	C	D	E	F	G	Total score
PRSP	1	1	0	0	1	0	0	3/7
GESP	1	0	1	1	0	0	0	3/7
RDSP	1	1	1	1	1	1	0	6/7
PSFE	1	1	1	1	1	1	0	6/7
National forestry policy	1	1	1	1	1	1	1	7/7
National agricultural policy	1	1	0	0	0	0	0	2/7
National NTFP policy <sup>a</sup>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	6/6	5/6	4/6	4/6	4/6	3/6	1/6	

- A. The policy, legislation or organisation mentions or encourages tree planting in general; Yes = 1, 0 otherwise.  
 B. The policy, legislation or organisation mentions domestication or agroforestry or encourages the planting of indigenous species on farmers' fields Yes = 1, 0 otherwise.  
 C. The policy, legislation or organisation gives or encourages usufruct rights to farmers Yes = 1; 0 otherwise.  
 D. The policy, legislation or organisation gives economic rights to farmers Yes = 1; 0 otherwise.  
 E. The policy, legislation or organisation encourages farmer enterprises on indigenous NTFP or AFTP Yes = 1; 0 otherwise.  
 F. The policy, legislation or organisation encourages research on indigenous, NTFP or AFTP Yes = 1; 0 otherwise.  
 G. The policy, legislation or organisation makes mention/encourages production/distribution of indigenous NTFP or AFTP planting materials Yes = 1 ; 0 otherwise  
 a. n/a means no information available.

#### 4.4.2 Legislation governing trees and other forest products in Cameroon

The latest legislation governing the forestry sector in Cameroon is the *1994 Forestry Law* and its decree of application (Ngwasiri *et al.* 2002). In the absence of separate laws governing trees on farmers' fields and the NTFP sector in Cameroon, some elements in the *1994 Forestry Law* address NTFP, and indirectly affect planting and management of trees in farming systems. The emphasis in analysing this legislation is placed on the following elements: clear definition of what is meant by forests and forestry and agricultural products; ownership and access to forest resources (with emphases on NTFP); their exploitation for personal and commercial uses; and how they may affect trees outside forests and the decision to plant trees. Section 6 of the *1994 Forestry Law* states that rights to trees are also restricted by the regulations governing land tenure and state land. The definition of NTFP and AFTP will be treated in the next paragraph whereas use and economic rights will be analysed in section 4.5.

- *Definition of forests, NTFP and AFTP*

Sections 2 and 9 of the *1994 Forestry Law* respectively define forests and forest products, and emphasise that forest products are different from agricultural products. The law defines forest products as ‘mainly wood and non-wood products as well as wildlife and fishery resources derived from forests’. The law, however, does not define what agricultural products are, nor does the appropriate Ministry of Agriculture in Cameroon provide any formal definition of agricultural products. The implication of this lack of definition is that confusion arises as to whether products harvested from farm trees should be considered as agricultural products or forestry products. Similar questions have been posed by Belcher (2003) who questioned whether a given product is a NTFP even if it is derived from a farming system and thus subjected to the same regulations as NTFP products gathered from the wild. The reality in the field is that forest officials harass producers and especially traders who deal in such products based on forestry regulations. This practice is common for example in the case of *Cola* spp and *Irvingia gabonensis*, *Ricinodenron* and *Gnetum* (Betti 2007b)

#### **4.4.3 Laws and regulations related to land in Cameroon**

Land and tree tenure rights have been identified as important factors that affect everyday decisions of farmers as to what crops to grow, the type of investments to make and the adoption of new and promising agricultural technologies for climate change mitigation amongst which agroforestry (Knox *et al.* 2002; IFAD 2008). In Cameroon, specific provisions of the *1994 Forestry Law* – for example, ownership of forests and aquaculture establishments – refer to the regulations governing land tenure and state land. Rights to land in Cameroon are torn between traditional property rights and modern laws (Tchapmégni 2007).

*The traditional property or customary land tenure system* varies between regions and between ethnic groups (Schreckenber *et al.* 2002; Tchapmégni 2007; ADB 2009; Oyono 2009; Platteau 2009). In pre-colonial times, land in Cameroon was perceived as community property and was handed down from one generation to another. It was thus difficult to talk about private ownership of land during this time.



*Formal rights* to land by individuals were introduced during the colonial period. As was mentioned in chapter three, Cameroon has gone through German, French and British colonial regimes. Consequently, the current legislation and regulatory framework (ordinances N° 74-1 and N° 74-2 of the 6<sup>th</sup> of July 1974) are influenced by these colonial masters (ADB 2009; Platteau 2009). The 1974 law also created a framework for private ownership of land sanctioned by registration and a title. Following the law, the customary rights (use rights) give the possibility to occupants of national land to register a piece of land and receive private ownership. Unfortunately, due to the complicated procedures involved in obtaining land certificates (van den Berg and Biesbrouck 2000), many Cameroonians have resorted to using the traditional or customary system to acquire land, especially in rural areas. The complicated procedures involved may explain why only 2% of the Cameroonian territory has been issued with land certificates (ADB 2009). For rural land, only approximately 3% has been registered and in most cases by owners of large commercial farms. Small-scale farmers who usually secure land under local agreements have difficulty taking advantage of the opportunity presented by the law.

#### **4.5 Possible impact of current legislation on farmers' and traders' decisions: a theoretical analysis**

An assessment of the legislation governing trees in Cameroon (*1994 Forestry Law* and the *1974 Ordinance on Land Tenure*) reveals that it potentially limits smallholder producers' economic rights to exploit NTFP and in reality limits their rights to the trees they plant on their farms:

##### *Usufruct and economic rights to exploit and sell NTFP*

Ngwasiri *et al.* (2002) elucidated access rights for local people based on the 1994 Forestry Law and the 1995 decree of application. Based on their analyses, local populations are conferred usufruct rights to forest resources, which constitute the right to exploit NTFP for personal use, but not for commercial purposes. On the other hand, some NTFP are defined as *special products* in the law (section 9 (2)), meaning that interested parties are expected to obtain permits to exploit such special products. To obtain these permits, interested parties have to go through the same procedures as those dealing with commercial timber exploitation (Djeukam 2006a; Betti 2007b). Because the whole concept of NTFP is poorly defined, the

laws meant to govern the forestry sector impact directly on the same species found on farmers' fields (AFTP). The resultant effect is that farmers' property rights are poorly defined as the products which come from their farmland are *subjected to forestry legislation and regulations*. This means that policy makers need to enact subsequent legislation and regulations to adapt to current shifts in agricultural and conservation practices where originally wild tree species are now planted on farm.

### *Rights to trees*

Following the 1994 *Forestry Law*, trees planted on land without a title deed belong to the state. Also, all naturally growing trees belong to the state, even if they grow on cultivated land. In other words, trees growing on private land will only be considered property of the individual if the person claiming rights to the trees has a deed. This means that if the laws were to be properly enforced, most farmers would lose their rights to the trees on the land for which they are claiming ownership under customary rules. The 1994 *Forestry Law* also stipulates that owners of private forest need to draw up management plans with regards to the trees they plant. The law clearly states that orchards are not considered as forests, but no provisions were identified to differentiate between these or to define what an orchard is, nor did they distinguish between products harvested from orchards and those from the wild. The procedures to obtain management plans to exploit own trees incur both transaction and operational costs, and can result in disincentives to farmers planting trees on private land.

Although the 1974 land ordinance confers the right on every citizen to own land, some customary regimes limit this right for women and some social groups, including pastoralists in some nomadic areas. In the Northwest region of Cameroon (for example) only 3.2% of registered land certificates representing 0.1% of all registered land surface, belong to women (ADB 2009). This customary regime may thus have a negative effect on women's rights and their ambitions to plant trees. However, these customs are dynamic and may not necessarily stop women from planting trees if they are exposed to opportunities. For example, experience of ICRAF reveals that women in Ngali II (a village in the south of Cameroon) actually planted *Irvingia* spp. on their farms when they were introduced by research into tree domestication techniques.

## 4.6 Discussion

It is clear that no mechanism, laws nor regulations exist that identify or separate species harvested from the wild from those that could also be found on farmers' fields in Cameroon. If the existing laws were properly enforced, they could act as disincentives for farmers to plant those highly regulated species on their farmland. This situation is similar to the one in Indonesia where export restriction for raw materials officially designed to protect natural rattan stands, resulted in the total collapse of their cultivation (Fried 2000). Another Indonesian example is that harsh reinforcement policies concerning sandalwood collection on the Island of Timor forced local people to start uprooting the species that had regenerated naturally on their land (Michon 2005). In Nepal, there is evidence that the government imposes a levy whenever it becomes aware of a NTFP utility; when farmers become aware of these changes they lose interest in investing in the products (Gautam and Devoe 2002).

In Cameroon, a similar case was documented in the ministerial decisions of 2005 that listed products classified as forests products of special interests to the state; two species (*Aniegeria* spp and *Eucalyptus* spp) were added in 2006 restricting their exploitation to special permits. This conservation measure may have the unintended negative consequence that farmers in Cameroon will no longer invest in these and other species on their farm. This may be a major setback to the income diversification strategy as defined in the RDSP, especially as ASB (1998) reported that enriching cocoa farms in Cameroon with fruit trees (indigenous and exotic) can increase revenue from cocoa farms by up to USD 500 per year.

Existing legislation and regulations in Cameroon are unclear and result in forest and police officials to seek rent from traders in the form of bribes and other informal taxes. Ndoye and Awono (2010) estimated these informal taxes for a car transporting 1.5 tons of *Gnetum* spp; from the Centre region to Idenau in the Southwest region (distance of about 450 km) to be about 530 USD. This rent-capture may prevent new traders from starting a business and discourage existing traders from expanding on their operations. Also, traders may be forced to pass on the extra charges in the form of lower purchase prices to farmers and higher selling prices to consumers (Ndoye 2005). A clear distinction between AFTP and NFTP in legislation would decrease the rent-seeking behaviour of forest and police officials, and increase farmers'

incentives to formally harvest, handle and process the products, eventually leading to an increase in state revenues (Schreckenber *et al.* 2006a).

To avoid confusion between NTFP collected from the wild and from farmers' fields, scientists at the World Agroforestry Centre working on tree domestication and agroforestry propose and use the term *AgroForestry Tree Products* (AFTP) to identify timber and non-timber forest products that are harvested from trees cultivated outside forests. This distinguishes them from NTFP extracted from natural systems (Simons and Leakey 2004). Subsequent legislation can thus adopt this definition and further introduce certificates of origins to distinguish or differentiate products harvested from trees in agroforestry systems from those that are collected from the wild.

Because Cameroon law implies that trees planted on land without a title deed belong to the state, the law can be viewed as a disincentive to tree planting. However, empirical evidence on the relationship between tenure security (especially measured by land title) and tree planting in Sub-Saharan areas has been contradictory. Where proven, the evidence has not been sufficiently robust and widespread (Bromley 2008a; Arnot *et al.* 2011).

## **4.7 Conclusions and policy implications**

It can be concluded from this case study that despite good intentions to include agroforestry in most rural development programs, the differential location of trees in different land uses in Cameroon may favour contradictory policies and legislation. Westergren (1996), for example, argued that the variety of names defining trees on farms is a reflection of the confusion among laymen and experts concerning the possibilities of traditional forestry to intervene on land where agriculture plays a dominant role. This suggests that trees outside forests could be under the control of forestry or agricultural legislation or a combination of both, or may be totally ignored by either or both.

The Cameroon case reflects a neglect of indigenous species by both the forest and agriculture ministries. It also demonstrates the need for an inter-ministerial committee to revise existing laws and regulations governing cultivation of indigenous trees on farms. This committee should also include representatives from the ministry of land tenure because beside forest

regulations, land tenure regulations affect decisions to plant trees and rights to trees. This inter-ministerial committee should recognise that exploitation, transport, import and export of indigenous fruit crops from farmers' fields do not pose any threat to conservation (Schreckenberg *et al.* 2006b), suggesting that those agroforestry products should be treated like conventional farm products. However, the policies and legislation should distinguish species from which harvesting practices are a threat to their sustainability, such as *Prunus africana* and *Gnetum* spp.

In designing policies for indigenous trees on farms, policy makers should consider that: 1) most NTFP in the wild with high economic value have the potential of being planted on farmers' fields in the medium to near future, as research is currently developing technologies to domesticate them; and 2) most development projects in the field of climate change (REDD and REDD+) may encourage tree planting by farmers. Thus, a boundary needs to be set to define when a product ceases to be a forest product and becomes an agricultural product. In this context, it is proposed that the inter-ministerial committee considering the revision of laws governing trees in Cameroon should not only consist of foresters with strong drive towards conservation as was the case with the 1994 *Forestry Law* (Ekoko 2000), but also of experts in the agricultural field as well as in land tenure and climate change. Agricultural experts would thus provide insights on an appropriate definition of agricultural products and agroforestry, identify the most productive ways to introduce trees on farms in order to guarantee product quantity and quality, as well as improve the competitiveness of agroforestry as an appropriate land use system for farmers.

In order to encourage farmers to plant trees, the law would also need to make provision for incentive mechanisms such as making planting materials more accessible to farmers or some form of payments for environmental services. Evidence of incentive-oriented policies is reported in Europe, where policies such as direct aid for afforestation, direct aid for the first five years of plantation maintenance, compensatory payments for a farmer's loss of income, have contributed to the afforestation of one million hectares of agricultural land within a period of five years (Lawson *et al.* 2002). In cases where farmers do not need to plant indigenous fruit trees because they naturally grow in existing farming systems, policies can be designed to encourage farmers to retain and manage these trees. As an example for Africa, government support for farmer-managed regeneration of indigenous trees on agricultural land

implemented by the Government of Niger and international NGOs has resulted in the spread of indigenous trees on more than 5 M ha (Haglund *et al.* 2011).

Since it is difficult to differentiate fruits harvested from wild trees from those harvested from farmers' fields, there is a need for forest and agricultural extension services with research support to facilitate certificates of origin based on the origin of the resource as either wild or from farmers' fields. In the long run, through the continued efforts of tree domestication research to develop high quality planting materials with high market potential, fruit from trees on farmers' fields may out-compete wild fruit as harvesting costs are reduced and the fruit quality becomes more uniform and higher. This would reduce the pressure on natural stands, thereby also meeting conservation objectives.

#### **4.8 Recommendation for further research and link to the next chapter**

Most of the conclusions drawn in this chapter stem from examining laws and regulations as they exist and are currently being applied in Cameroon. However, there are no studies that provide any empirical evidence about farmers' awareness and perception of these regulations. A study of this kind is thus necessary. The principal research question in this case will be whether Cameroonian farmers are aware of existing legislation and whether properly enforced regulations would affect their tree planting decisions. Another interesting research question would be whether farmers are willing to accept certificates of origin to distinguish farm trees from wild ones. These questions are addressed in chapter 5.

## Chapter

# 5 Can Properly Enforced Forestry Regulations Affect Farmers' Decisions to Plant Indigenous Fruits Trees? Insights from Cameroon

## Abstract

Forestry laws and regulations are theoretically reported to affect the adoption of agroforestry technologies, specifically with regard to planting indigenous fruit trees that are important sources of nutrients and income to thousands of farmers. However, data on farmers' perception and behaviour towards these policy instruments are scarce and contradictory. Based on data collected from 394 households in Cameroon, using a structured questionnaire, farmers' awareness, perception and willingness to accept policy instruments governing on-farm trees were assessed. The study further investigated whether these policy instruments would affect their decisions to plant selected indigenous fruit trees on their farms. The analysis found that a majority of farmers are unaware of the laws governing access and trade in indigenous fruit tree species. Furthermore, if effectively applied, the regulations would not discourage a significant majority of farmers (60%) from planting the trees on their farms, because the practice constitutes part of their traditional farming system. Yet we argue that planting of indigenous fruit tree species could increase with simpler rules as 40% of the farmers would refuse to plant such trees if existing regulations are effectively enforced. The study therefore concludes that there is a need for new policies to attract more farmers to integrate indigenous fruit trees on their farms.

**Key words:** policy instruments, NTFP, farmers' perception, tree planting, indigenous fruit trees, Cameroon

This chapter is compiled and based on:

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## 5.1 Introduction

Indigenous fruits are important sources of nutrients for thousands of farmers and consumers living in rural and urban communities around the world. They provide micronutrients or constitute safety nets during periods of scarcity. Fruit trees diversify agricultural systems and provide income to rural communities, especially women (Schreckenberg *et al.* 2006a; Bharucha and Pretty 2010; Leakey 2012). Yet, only little attention has been paid to the domestication of a wide range of indigenous fruit species that provide food, nutrition, medicines and other (environmental) services to humans (Leakey 2012). In Cameroon, there is evidence that farmers are interested in the domestication and integration of indigenous fruit trees in existing farming systems (Leakey *et al.* 2004; Tchoundjeu *et al.* 2006). However, the institutional environment governing their exploitation and sale may not be conducive as the species are not recognised as conventional farm crops, at best they are considered as wild Non-Timber Forest Products (NTFP) (Schreckenberg *et al.* 2006b; Betti 2007b). In effect, the exploitation and sale of indigenous NTFP are governed by the *1994 Forestry Law* which requires that commercial exploitation of NTFP is submitted to a permit system (see Chapter four). Meanwhile, the World Bank amongst others, defines agriculture to include agroforestry (i.e. AFTP) and cites the integration of fruit tree crops into farming systems as one option to increase food production (World Bank 2007).

While some variables affecting farmers' tree planting decisions such as farm size, land tenure, access to labour, capital, education, etc. have been studied in detail (Adesina *et al.* 2000; Degrande 2001; Denning 2001; Nkamleu and Manyong 2005; Tchoundjeu *et al.* 2006), numerous aspects of the institutional environment have been overlooked in agroforestry research, despite their increasing prominence in fields like forestry and agriculture (Kant and Lehrer 2005). The few studies (Belcher *et al.* 2002; Scherr *et al.* 2004) that address the institutional environment discuss how access to land and tenure security affect farmers' decisions in general and to plant trees in particular. To the best of our knowledge there are no studies that look at the consequences of policy instruments such as legislation on farmers' decisions to plant indigenous fruit trees. In cases where formal regulations and legislations governing trees were analysed (Laird *et al.* 2010b; Ndoye and Awono 2010) emphases are put on access and economic rights to Non-Timber Forest Products (NTFP). In the rare case where attempts are made to address how existing legislation affects farmers' tree planting decision



such as in Foundjem-Tita et al. (2012b), the analyses are basically theoretical without any empirical evidence coming from farmers. Other authors, for example Schreckenberg *et al.* (2006a), without any data to substantiate their statement, report that farmers who plant or manage NTFP on-farm are often not aware of the policy and legislative environment governing access and trade. Therefore, it cannot be concluded whether these policies or legislation affect their decisions to plant indigenous species. In such a situation, it is difficult to analyse the relevance of policy instruments or to explain their effect on farmers' livelihoods. Hence, rigorous analyses that can provide predictive understanding of farmers' decisions if these policy instruments are effectively applied are required (Kant and Lehrer 2005; Kaine *et al.* 2010).

The rigour of a rule depends on how it is interpreted by individuals and society as a whole (Kant and Lehrer 2005). Also, as discussed in chapter two, in the process of institutional change, each individual calculates his/her expected benefit from any proposed changes in existing rules before deciding on whether to make a shift under the new rules or not (Greif and Kingston 2011). This means that the impact of policy and policy instruments governing access to and trade in trees and tree products on farmers' tree planting behaviour depends on the individual's perception of the institutions. When perceived as illegitimate, compliance will be low and efforts to enforce laws will be costly (Kuchta-Helbling 2000).

This research seeks to: (i) provide evidence about the level of farmers' awareness of existing legislation governing access and trade in selected indigenous fruit trees in Cameroon; and (ii) answer the question whether effectively enforced regulations would affect their hypothetical behaviour to plant indigenous trees on their farms. The study also assesses (iii) the determinants of farmers' willingness to accept new policy instruments, such as a certificate of origin meant to distinguish AFTP from NTFP.

The rather novel contribution of this study to the literature analysing farmers' adoption of agroforestry technologies is that it focuses on policy instruments and more specifically on legislation governing trees and tree products which other studies have not included or that are often generalised under the canopy of the institutional environment. The importance of analysing such legislative instruments is that they may be (come) the focus of amendments in subsequent policy reforms.

The rest of this chapter is organised as follows. The next section describes the institutional environment governing on-farm trees in Cameroon based on the *1994 Forestry law*. Then, the

conceptual framework that describes the assumed relationship between farmers' attitudes and intentions to plant trees is described. The methodology for data collection and the type of data gathered are also described, after which results are presented and discussed. The chapter ends with a number of conclusions and policy implications.

## **5.2 Research framework and hypotheses**

The research framework rests on the assumption that farmers' attitudes i.e. positive or negative feeling towards existing regulations (Fishbein and Ajzen 1975) are only one of the factors that may affect their tree planting decisions, whereas in a particular situation other factors could be more influential. The study also relies on the assumed relationship between attitudes and actual behaviour, and agrees with some researchers (Fishbein and Ajzen 1975; Vanslebrouck *et al.* 2002; Cooper and Schindler 2006) that stated attitudes are a good approximation of actual behaviour. The study assumes that besides socio-economic and demographic factors that are often used to understand farmers' decisions to adopt agroforestry technologies in developing countries, it is important to consider specific elements of the institutional environment, especially when they are properly enforced. It is thus supposed that farmers' on-farm tree planting decisions will vary depending on the specific policy and existing policy instrument. A breakdown of how the institutional environment, specifically legislative instruments governing access and trade in trees and tree products, may affect farmers' tree planting decisions leading to the hypotheses of the study is described in the next section.

## **5.3 Policy instruments governing access and trade in tree and tree products**

A detailed description of the policy instruments governing trees was discussed in chapter four. One of the main conclusions of that chapter with regards to on-farm trees and tree products is that the 1994 *Forestry Law* and its 1995 *Decree of Application* governing trees in Cameroon fail to distinguish between indigenous species harvested from the wild and those that may be found on farms, as also reported by FAO *et al.* (2010). Based on this institutional gap, indigenous AFTP from farmers' fields are subjected to licenses and permits that are intended

to conserve and protect NTFP from the wild or from the forests. It is therefore argued that farmers' rights to such indigenous trees and tree products that are found on their farms but may also occur in the wild are poorly defined.

In reality, virtually all indigenous species of high commercial value are affected by either legally or illegally forestry controls irrespectively of their origin; on-farm or from the wild (Betti 2007b). The argument put forward by some forest officials is that even though some of the species are collected from farmers' field, they are self-propagated and thus need to be conserved. Since it is difficult to distinguish AFTP from NTFP and in order to continuously conserve forestry resources, government may not change existing regulations governing access and trade in NTFP. This will continue to indirectly impact farmers' rights to exploit and sell AFTP. We thus formulated the following hypotheses:

*H1. A majority of farmers would disagree that AFTP are subject to the same regulations as NTFP (i.e. requiring an exploitation permit and payment of a regeneration tax.*

*H2. A majority of farmers would refuse to plant indigenous AFTP if the latter are subjected to an exploitation permit.*

Conclusions from different studies (Djeukam 2006a; Betti 2007b; FAO *et al.* 2010; Foundjem-Tita *et al.* 2012b) suggest that the GOC should make it possible to distinguish or ease the process of tracing species that may be found in the wild and also on farmers' fields. One possible method of distinction is for the Ministry of Agriculture to issue a certificate of origin to proof that a farmer planted a given indigenous tree or if it is self-propagated, that it is being actively managed by the farmer. From a preliminary discussion with farmers, some find it illegitimate and absurd to go through the process which they judge would be arduous and ridiculous because of corruption issues. This leads us to the third hypothesis:

*H3. A majority of farmers would reject the proposition of a certificate of origin to prove that they planted trees belonging to a given indigenous species*

It was assumed that farmers' awareness and willingness to accept certificates of origin and their contingent decisions to plant indigenous trees subject to permits and payment of a regeneration tax would depend on the agro-ecological environment and on their socio-

economic characteristics. The effect of the agro-ecological environment is discussed in the subsection that follows.

### **5.3.1 Agro-ecological, demographic and socio-economic diversity of NTFP farmers**

As discussed in chapter three, in a heterogeneous society like Cameroon, people differ along agro-ecological, demographic and socio-economic characteristics. This means that people from different agro-ecological settings, with varying demographic and socio-economic characteristics are likely to have different attitudes and behaviours with respect to a number of issues including on-farm tree planting. This is because of the main assumption that people's attitudes are embedded in their culture and/or the environment in which they live (see Chapter two). It is therefore necessary to assess how these variables may affect farmers' intentions to plant indigenous trees subject to permits and certificates of origin. This variability is discussed below:

#### *b. Agro-ecological and cultural diversity*

The target population for this study were farmers involved in either on-farm cultivation or gathering from the wild or from their farms, indigenous fruits species that are a subject of debate as to whether they are forest or agricultural products (Belcher 2003). The case study species *Ricinodendron heudelotti*, *Cola anomala* and *Irvingia gabonensis* were described in chapter three. As a recall, for practical reasons, *Gnetum* spp collectors were not involved in the survey.

A description of the administrative and agro-ecological setup of Cameroon was given in chapter three. Taking into consideration the distribution of the three species studied, villages from five regions grouped into two different agro-ecological zones were selected. The regions cover: the humid savannah (Northwest and Western regions) and humid forest (Southwest, South, Centre and East regions). For details on choice of regions and villages, see chapter three, sections 3.3 to 3.4. The decision to choose farmers from two agro-ecological zones was made in order to test the effect of ecological diversity on farmers' perception of existing legislation and intentions to plant trees.

In the humid forests trees grow naturally and are more abundant compared to the humid savannah. Thus, farmers from forest zone may have more negative attitudes towards policy instruments that infringe on their property rights to on-farm tree products compared to those from the savannah who, because of fewer trees occurring in the wild, may bear the policies and still plant trees. This leads us to the next set of hypotheses. Compared to farmers from the savannah regions,

*H4a. Farmers from the forest regions are more likely to have an overall negative attitude towards permits.*

*H4b. Farmers from the forest regions are more likely to have an overall negative attitude towards certificates of origin.*

*H4c. Farmers from the forest regions are more likely to refuse to plant indigenous trees subject to permits.*

#### *c. Socio-demographic characteristics*

Some studies have tried to relate the decision to plant trees to farmers' socio-demographic and socio-economic characteristics. Among the latter figure age, experience of a farmer in handling the selected species, respondent's sex and level of education, total land owned, household size and distance to market (Gould *et al.* 1989; Adesina *et al.* 2000; Degrande *et al.* 2006; McGinty *et al.* 2008). It is also argued that these characteristics may affect farmers' perceptions of existing legislation governing trees, and consequently their hypothetical decisions to plant trees subject to these legislations.

Age is often studied as a factor that significantly influences farmers' decisions. The argument for age is related to the longer planning horizons of tree planting (Gould *et al.* 1989). As compared to elderly farmers, young and less-experienced farmers are more risk takers (McGinty *et al.* 2008) and would thus more easily accept to plant trees subject to existing legislation.

*H5. Younger farmers are more likely to accept policy instruments than older ones.*

The importance of human capital for technology adoption has been highlighted by Schultz (1964). Quoting Blaug, (1974), Casey (2004) reports that farmers with higher human capital are generally more flexible and more motivated, and adapt more easily to new challenges than those with less human capital. Relating this to our, case it is postulated that farmers with higher human capital are more likely to understand and accept specific policy instruments and to plant indigenous trees compared to those with lower human capital.

Several parameters were used in measuring the level of human capital. They include formal education, experience of a farmer in marketing the specific species and membership in NTFP or AFTP producer groups. Other factors not directly related to human capital but linked to experience include the number of the respective trees planted by the farmer, or the number inherited by the farmer. The argument put forward here is that farmers with previous experience in marketing the selected species, who already have the selected species on their farms (inherited or planted) and who belong to producer groups are more likely to accept policy instruments and to plant the selected species because they are already aware of the benefits of on-farm trees for their livelihoods.

*H6. Farmers with higher human capital and experience , characterised by: H6a: higher education, H6b: experience in handling the species, H6c: number of trees inherited, H6d: number of trees planted, H6e: membership in producer organisations are more likely to accept policy instruments governing trees*

It is often reported in literature that women compared to men have less secured land property rights and less access to other resources such as labour and information, and are thus less likely to accept to plant trees compared to men. Even though men are the nominal owners of most NTFP or AFTP, women are the main beneficiaries of their sale and often decide on how the income is used (Schreckenber *et al.* 2006a). It is thus hypothesised that:

*H7. Formal legislations would have less negative effect on women's decisions to plant the selected species than on men's decisions.*

Literature on the impact of farm size on farmers' decisions to engage in agri-environmental services is contradictory (Defrancesco *et al.* 2008). In some cases, large farm size is considered as a potential to encourage farmers to adopt agri-environmental measures. As they

have abundant land, they can give up some to plant trees without compromising food cropping. Yet, studies, from four communities in Cameroon show that density of on-farm fruit trees increases as farm size decreases (Schreckenberg *et al.* 2006a). Within the context of this study, it is hypothesised that:

H8. *The less land farmers have, the more they develop negative attitudes towards any regulation that may infringe on their rights to trees.*

## **5.4 Methodology**

### **5.4.1 Sample and sample size**

The target population for this study consists of farmers from the humid forest and the humid savannah of Cameroon. In order to involve farmers who have experience in dealing with our study's species, study sites in each agro-ecological zone were chosen to represent areas where the target species are known to grow and where farmers are actively involved in their exploitation and commercialisation.

Based on the World Agroforestry Centre's experience and with the assistance of community-based organisations working with farmers either on production and/or the commercialisation of each of the selected species, and of traders who buy from farmers in production villages, a number of major production zones (Divisions or Subdivisions) were selected (see chapter three). Degrande *et al.* (2006) report high levels of site-specificity of species distribution in Cameroon and further note that species with high commercial importance were best-represented in all the local farming systems. For these reasons, major supply villages were chosen for each of the selected species in each of the major production zones in each agro-ecological region. For similar reasons, Brown and Lassoie (2010) selected different fruit species in each of the areas where they collected data to study the interaction between market forces and the management of NTFP in Cameroon.

In each selected village, a list of farmers most involved in either production or collection of the targeted wild species was drawn based on local experts' knowledge. From each list, the required number of farmers (see Table 3.1) based on targets fixed for the total study and per

village was randomly selected for an interview. The choice of respondents in any given household was either the husband or the wife depending on who was most actively involved in handling the respective species. In all, the procedure resulted in a sample of 394 farmers.

#### **5.4.2 Questionnaire design**

A questionnaire with close-ended questions was used to collect the required information. The questionnaire was structured as follows: a first series of questions measured farmers' cognitive attitudes towards existing policies and legislation governing access and trade in NTFP. The questions sought to know whether farmers were aware of formal definitions dealing with the studied species as used in the *1994 Forestry Law*, if they were aware of the legislation and regulations that govern access and trade in the species, and about their knowledge of the reasons why the Government of Cameroon imposes regulations on the selected species. The answers measuring their awareness took a dichotomous format (yes or no).

The second series of questions consisted of three items. The first item wanted to know if farmers accept the present provision in the law whereby on-farm indigenous trees are classified as NTFP. This means that their commercial exploitation is subjected to obtaining trade permits (special or mutual) and to the payment of a regeneration tax as if the products were collected from the wild. The second item in this series wanted to know if farmers would be in favour of the introduction of certificates of origin. The purpose of the latter is to trace indigenous trees on-farm as agricultural products in order to avoid harassment from police and forestry officials who consider them as forestry products. To measure farmers' attitudes towards these items, they either had to agree or disagree with each statement.

The third item in the series examined the conditional behaviour of farmers to plant the selected species if these would be subjected to permits which automatically confer on them the obligation to pay a regeneration tax before exploitation. In this case, farmers were asked if they would continue to plant indigenous trees on their farm if government would effectively enforce the permit system. In order to avoid acquiescence bias (risk of saying yes without proper reflection) the statement used in this case was negatively keyed and farmers either had to agree or disagree with it.



Other sections of the questionnaire addressed socio-economic and demographic information related to respondents' sex, age, experience in handling the respective species, experience with training in tree planting, education, total surface of land cultivated, the number of trees found on-farm before taking over the farm and total number of trees planted by respondents themselves. Data collected were entered and analysed in the Statistical Package for Social Sciences (SPSS .17). Descriptive statistics of all socio-economic and demographic variables are presented in table 5.1.

Table 5.1: Descriptive statistics of socio-demographic variables used in the empirical model (n = 394)

Variable	Description	Percentage
<i>Farmer characteristics</i>		
Age_class	Age group of respondent (years)	
	1= < 35	21
	2= [35-55[	48
	3= 55+	31
Edu	Educational level of the respondent	
	0= None	21
	1= Primary	42
	2= secondary/University	37
Sex	Sex of respondent	
	1= Male	51
	0 = Female	49
Hhsizgrp	Household size (number)	
	1= [1-5[	33
	2= [5-10[	40
	3= 10+	27
Expfarmer	Number of years respondent has been exploiting the selected species	
	1=[1-5]	22
	2=[5-19[	42
	3=20+	36
Gp_membr	Membership in a producer group specialised in the selected species	
	1= Yes	16
	0= No	84
Tot_landsizeg	Total land size owned by the respondent (ha)	
	1=[0.5-3[	34
	2=[3.5-5[	30
	3=[5.5-8[	17
	4=8+	19
Tot_specfoundg	Total number of target species inherited by respondent	
	0=0	12
	1=[1-10[	41
	2=[10-50[	39
	3=50+	8
Tot_treeplantedg	Total number of specimens planted by respondents	
	0= 0	60
	1= [1-10[	18
	2= [10-50[	16
	3= 50+	6
<i>Community characteristics</i>		
Agrecologie	Agro-ecological zone	
	1= Savannah	50
	2 = Forest	50
TranMkt	Transportation cost to closest market (proxy for distance and nature of roads)	
	1= [1-500[	20
	2= [500-999[	45
	3= 1000+	35

## 5.5 Analytical framework

Frequencies for categorical answers were computed and analysed. Logistic regression was used to test whether farmers' willingness to accept policy instruments and their intentions to plant indigenous fruit trees contingent to permits were related to socio-economic, demographic and agro-ecological characteristics.

### 5.5.1 Description of the logistic regression model

Following the approach of logistic regression, each dependent variable (Table 5.2) used in the model was transformed into a dummy. For example, a farmer was assigned a code of 1 if he agreed with an item and given a value of 0 otherwise.

Table 5.2: Dependent variables used in the logistic regression model

Variables	Measure
<i>Willingness to accept policy instruments</i>	
If farmer agrees that AFTP and NTFP should be governed by the same legislation (issuing of permits)	
If farmer agrees that he should be issued a certificate of origin to distinguish AFTP from NTFP	1= agree, 0= disagree
<i>Intentions to plant indigenous fruit trees contingent to permits</i>	
If farmer agrees that he will no longer plant selected species if government introduces and enforces permits for commercial exploitation	

Logistic regression is a multivariate technique which allows estimating the probability of an event occurring or not occurring based on a binary, dependent variable like the ones shown in table 5.2 and a set of one or more categorical or continuous independent variables (Peng *et al.* 2002) as those in table 5.1. This means, for example, that predicting whether or not a farmer with a given socio-demographic characteristic will accept a given policy instrument implies calculating the probability of the farmer accepting the policy instrument. When relating one independent variable  $x$  to a qualitative dependent variable  $y$ , the logistic regression model is written as shown in equation 5.1:

$$P(y) = \exp(\beta_0 + \beta_1 x) / (1 + \exp(\beta_0 + \beta_1 x)) ; \quad (\text{eqn 5.1})$$

where  $\beta_0$  and  $\beta_1$  are coefficients estimated based on the data:  $P(y)$  = probability of the event  $y$  coded with 1 happening instead of the event coded as 0.

In case of more than one independent variable, the logistic model is written as shown in equation 5.2:

$$P(y) = \exp(Z) / (1 + \exp(Z)) ; \quad (\text{eqn 5.2})$$

$$\text{where } Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad (\text{eqn 5.3})$$

$\beta_i$  = coefficients estimated on the basis of the data, making use of the maximum likelihood method, and  $X_i$  =  $i^{\text{th}}$  independent variable.

It is worth noting that the central mathematical concept behind a logistic regression is the logit, the natural logarithm of an odds ratio (Peng *et al.* 2002). This means that the logit is the natural logarithm (ln) of the odds of  $y$ . The odds of  $y$  is the likelihood of  $y$  occurring. In terms of probability, the odds is the ratio of the probability of  $y$ , i.e  $P(y)$  occurring versus the probability of  $y$  not occurring  $(1 - P(y))$ . The model thus predicts the occurrence of  $y$  subject to  $X$ .

A simple logistic model can thus be written as shown in equation 5.4:

$$\text{logit}(y) \text{ natural log (odds)} = \ln(p(y)/1 - p(y)) = \beta_0 + \beta x \quad (\text{eqn 5.4}).$$

Expanding the simple logistic model to one having relevant independent variables, as in our case brings us to equation 5.5 as shown below

$$\text{logit}(y) = \ln\left(\frac{p(y)}{1 - p(y)}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n \quad (\text{eqn 5.5}).$$

The null hypothesis of the model is that all  $\beta_s$  are equal to zero. A rejection of the null hypothesis means that at least one  $\beta$  is different from zero.

Based on the number of dependent variables employed in this study, three logistic models were estimated subject to socio-economic and demographic characteristics of the respondents. Suitability of the models was determined using the model chi square, -2 log likelihood and percentage of correct prediction.

## **5.6 Results and discussions**

### **5.6.1 Respondents awareness of existing legislation**

Survey results show that a significant majority of farmers dealing with the target indigenous fruit species (88%) do not know what the government refers to as “Non-wood Forest Products” (NWFP), which is the official term used in the 1994 *Forestry Law*. Another 96% does not know what is meant by the term special products (Table 5.3).

When the terminology was explained to the farmers, they all acknowledged they had been exploiting the species for years but were not aware of the official terminology. When asked if they knew the official regulations dealing with exploitation and sale of the selected species, 29% responded affirmatively. Amongst the latter 29%, 25% correctly stated that their rights to the trees and tree products are limited to usufruct rights, while 75% were confused about personal and commercial rights. Only 3% correctly said that they would need to obtain permits and pay forestry taxes if they were to go beyond their usufruct rights. Multiple responses were possible, so the above total sums up to more than 100 percent.

At this point, the regulations were explained to those who were not aware of their existence and all respondents were further asked if they knew or could suggest why government restricts or regulates exploitation and sale of the species. Under scrutiny, some 87% percent claimed they were not aware of any such reasons. Narrative discussions revealed that they think government actions infringe on their legitimate rights to exploit and sell what they perceived is theirs. The 13% who said they knew why government is restricting exploitation gave several reasons to explain the latter state decisions. About 43% of them said that forestry officials had explained to them that the NTFP are animal feed and if they are not restricted, animals will suffer and die from starvation. Another 43% explained that government's

decisions are meant to conserve the species, while 14% think it is a strategy installed by the state to make money.

Table 5.3: Awareness of formal definitions of NTFP and special products as used in the 1994 Forestry Law (N= 394)

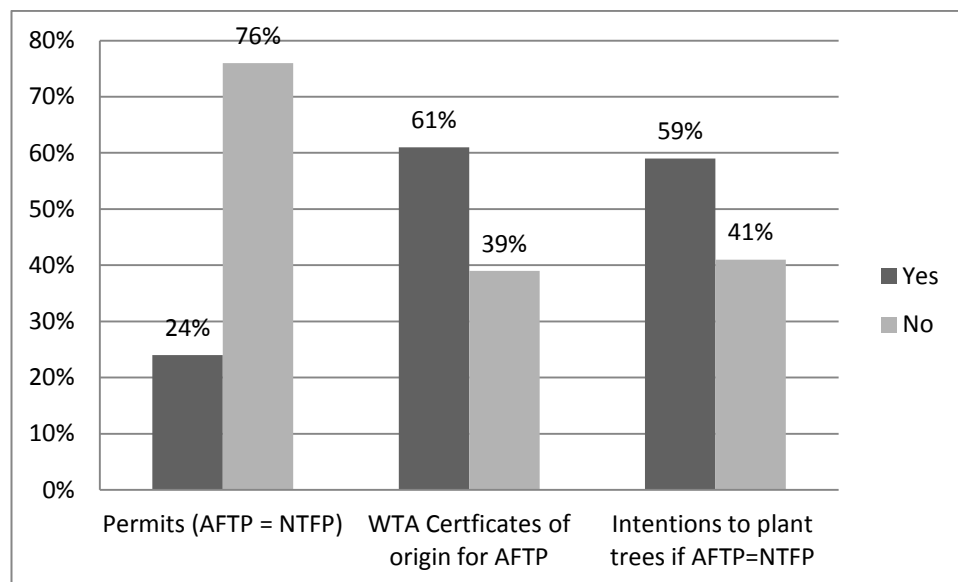
Questions	Percentages
	Yes
Do you know what the government refers to as Non-Wood Forest Products in the 1994 Forestry Law?	12
Do you know what the government refers to as special products in the 1994 Forestry Law?	4
Do know why government regulates or would want to regulate exploitation of the studied species?	13
Do you know why government imposes regulations on the sale of the studied species?	28

In order to highlight the influence of socio-demographic characteristics on farmers' level of awareness of existing legislation and policies, a chi square ( $X^2$ ) analysis was performed. Dependent variables were farmers' awareness of NWFP and special forest products as defined in the 1994 Forestry Law. Age, level of education, gender, and agro-ecological zone were chosen as independent variables.

Due to the low proportion (4%) of respondents who were aware of special products, it was not possible to statistically characterise them. Results show that the agro-ecological zone and level of education were significantly associated with farmers' awareness of NWFP (both p-values < 0.05). Crosstab analyses illustrate that 15% of farmers in the forest zone as against 8% from savannah knew what NWFP are. Also, 7% of farmers with secondary or university education as against 3% with primary or no education claimed awareness of NWFP. Results therefore suggest that farmers who had received either secondary or university education or those who originated from the forest zones were more likely to be aware of forestry regulations compared to those with only primary or no education and who originate from the savannah, respectively. The higher level of awareness of forest zone respondents may be related to the intensity of conservation activities that are applied there as compared to what is done in the savannah. This makes it possible for the forests dwellers to come in contact with conservationists who may likely explain the content of the law to them.

### 5.6.2 Willingness to accept policy instruments and intentions to plant trees subject to permits

It was hypothesised that since NTFP regulations in the 1994 *Forestry Law* infringe on farmers' rights to indigenous fruit tree products on their farms (AFTP), they would prefer products from the two origins to be clearly distinguished by law. This means that they would reject permits and would refuse to plant indigenous species on their farms, if the law on permits were effectively enforced. They would also accept certificates of origin to distinguish on-farm trees from those harvested from the wild. Figure 5.1 shows farmers' responses to the various statements assessing their willingness to accept these policy instruments.



**Figure 5.1** Farmers' willingness to accept policy instruments regarding AFTP

$\chi^2$  analysis confirms hypotheses one and three, as a significant majority ( $P = 0.00$ ) of respondents (76%) disagree that AFTP should be subjected to the same regulations as NTFP from the wild. A significant majority (61 %,  $P < 0.001$ ) accepted the proposition of a certificate of origin, whereas the remaining 39% refused. The main argument put forward by those rejecting a certificate of origin is that they would not want to have anything to do with government procedures because the process, as with most government *modus operandi*, may be very complicated. A significant majority (59%  $P < 0.001$ ) would continue to plant the selected species if they wanted to do so. This finding thus seems to reject hypothesis two.

However, a substantial proportion (41%) confirmed they would stop planting the selected indigenous trees if permits were enforced (Figure 5.1).

### **5.6.3 Analyses of agro-ecological and socio-economic factors affecting willingness to accept policy instruments (regression models)**

The factor, *agro-ecological zone* had significant negative effects ( $P < 0.05$ ) on farmers' willingness to accept permits to sell AFTP and also on their willingness to accept certificates of origin ( $P < 0.05$ ). Contrary to hypotheses 4a and 4b, farmers from the savannah were less likely to accept permits and certificates of origins compared to their counterparts from the forest zones. This may be because they might have planted the trees and would not want any procedures to interfere with their rights. With regards to the intention to plant trees subject to permits, no significant difference was observed between farmers from the savannah and those from the forest zone, thereby rejecting hypotheses 4c.

Model 1 (Table 5.4) shows that *education* ( $P < 0.05$ ) and *household size* ( $P < 0.10$ ) had significant effects on farmers' willingness to accept the requirement of permits to sell AFTP. The log odds of a respondent to accept a permit for AFTP was negatively related to his/her level of education and positively related to household size. In other words, respondents who had received either secondary or university education were less likely to accept permits than those who had not been to school ( $P < 0.05$ ). This contradicts the hypothesis H6a which stipulated that higher-educated farmers would be more likely to accept AFTP permits compared to the less-educated ones. A possible explanation may be that educated farmers are better placed to understand the implications of transaction costs in obtaining permits and would thus refuse to accept them. Taking farmers with more than ten household members as a reference, results showed that the odds of a household with less than five members to accept permits were 2.5 times greater than for households with more than ten members. This may be related to the fact that, as family size increases, their dependence on the species increases, whereby they would want to avoid any interruption on their sources of livelihoods.

The second model (Table 5.4) shows that farmers' experience in handling the selected species, together with household size, all had significant positive effects on farmers' willingness to accept certificates of origin. This supports hypothesis H6b. As expected total



land size (H8) had negative significant effects. In terms of odds ratio, the results indicate that the odds to accept a certificate of origin are 2.16 times higher for a farmer with less than five years selling experience than for those with more than 20 years of experience. The same is true for households with less than five members compared with households of more than 10 dependents. In other words, results suggest that smaller households and those with fewer years of experience with exploiting the species are more likely to accept certificates of origin compared to bigger households with many years of experience. This may be explained by the fact that farmers who are new in the business may be less worried by a certificate of origin compared to farmers who have been exploiting the species for more than 20 years without such complications.

Model three (Table 5.4) was used to characterise those farmers who would refuse to plant trees if a permit system would effectively be enforced. Results show that the log odds were positively and significantly related to group membership, level of education, household size and distance to market and were negatively related to farmer experience (number of years farmers have been exploiting the species for commercial purposes). The odds of a farmer to claim that he will not plant the selected indigenous trees because of permits were 2.8 times higher for farmers belonging to NTFP/AFTP producer groups, as compared to non-members. It was 1.8 times higher for secondary or university graduates compared to those who had not been to school and 2.02 times higher for households with between five and ten members compared to those with more than ten members. Finally, it was 1.2 times higher for households that pay between 0-500 FCFA for transport to get to the closest market compared to those who pay more than 1000FCFA with price being a proxy for distance and nature of roads.

The effect of higher, formal education on farmers' tree planting intentions in the case of permit introduction is similar to the effect of membership in AFTP/NTFP groups. This may be explained by the argument that organisations in the field of agroforestry work closely with farmer groups. In this regard, such structures might have empowered group members on their legitimate rights to indigenous trees and forest resources, resulting in a higher reluctance to planting trees contingent to permits. Another explanation may be that members of producer groups are more aware of the value of indigenous tree products and are more dependent on tree products than non-members. This means that while group membership may positively

affect farmers' decisions to plant indigenous trees in Cameroon (Nkamleu and Manyong 2005), it would constrain such an intention if exploitation would be subjected to permits.

Results of the likelihood that smaller households will refuse to plant indigenous trees subject to permits corroborate results from other studies such as those by Nkamleu and Manyong (2005) for Cameroon and Ayuka *et al.* (2011) for Kenya, showing that farmers' tree planting decisions increase with family size. However, the latter two studies, households were not constrained by permits. Unlike reported by Nkamleu and Manyong (2005), households who live closest to urban markets were more likely not to plant the selected species compared to those farther away. Again, this may be related to the perception of constraints posed by permits. Villages close to urban areas may thus refuse to plant trees because of the weak competitiveness with other crops such as vegetables.

Results also show that the longer farmers have been exploiting the species for commercial purposes, the less likely it is that they will refuse to plant the selected species in case of the introduction of permits. This can be explained by the fact that such farmers know the benefit they make from the species and would not want to give up these benefits. This result is consistent with that of Casey (2004) and suggests a positive attitude to permits by those who have been benefiting from the species. However, it may also suggest that the introduction of permits may be a major constraint for new farmers to enter into the business, as farmers who have no experience in exploiting the species were more likely not going to accept to plant trees if permits were introduced. Unlike hypothesised, gender was not found to have any significant effect on tree planting decisions. Finally, age was not found to have any significant effect in any of the three models.

Table 5.4: Coefficients per modality for each variable in logistic regression models 1-3 and suitability of model

Variable	Category	Model 1: Willingness to accept permit to sell AFTP	Model 2: Willingness to accept certificates of origin	Model 3: Respondent will not plant indigenous AFTP if government enforces permits
Gp_membr	Yes	-0.025 (0.479)	0.210(0.344)	1.047(0.375)**
Expfarmer Ref cat 20+	1= [1-5]	0.113 (0.507)	0.772(0.366)**	-0.345(0.358)
	2= [5-19]	0.234 (0.393)	0.476(0.274)*	-0.588(0.274)**
Age_class ref cat : 55+	1= < 35	-0.003 (0.531)	-0.111(0.397)	-0.287(0.397)
	2= [35-55]	0.155(0.421)	0.372(0.281)	0.067(0.284)
Edu ref cat: no education	1= Primary	-1.560 (0.802)	-0.325(0.426)	0.304(0.427)
	2 = secondary/university	-0.754 (0.319) **	0.099(0.254)	0.602(0.253) **
Sex	Male	-0.267(0.423)	0.098(0.321)	-0.015(0.309)
Hhsizegrp ref category 10+	1= [1-5]	0.952(453) **	0.801(0.310)**	0.417(0.305)
	2= [5-10]	0.446(450)	0.101(0.290)	0.703(0.296)**
Tot_Landsizeg (ha) ref cat: 8+	1=[0.5-3]	-0.071(0.498)	-1.012(0.390)**	0.433(0.375)
	2=[3.5-5]	0.301(0.451)	-0.965(0.373)**	0.122(0.362)
	3=[5.5-8]	-0.388(0.537)	-0.276(0.432)	0.547(0.400)
Tot_specfoundg ref cat = 0	1= [1-10]	1.486(1.253)	0.099(0.606)	-1.209(0.630)*
	2= [10-50]	1.206(1.253)	-0.334(0.544)	-0.542(0.572)
	3= 50+	1.450(1.176)	-0.346(0.520)	-0.775(0.537)
Tot_treeplantedg ref cat = 0	1= [1-10]	-0.833(0.939)	-0.857(0.623)	1.187(0.646)*
	2= [10-50]	-0.950(0.984)	-0.672(0.638)	0.795(0.663)
	3= 50+	-0.640(0.969)	-0.706(0.585)	0.992(0.614)**
Agroecologie Ref cat: Forest zone	Grass fields	-0.995(0.508) **	-1.264(0.361)***	0.563(0.351)
TranMkt ref cat: 1000+	[0-500]	-0.443(0.448)	0.081(0.345)	0.913(0.343)**
	[500-999]	-0.286(0.364)	0.301(0.273)	0.541(0.273)*
Constant	Constant	-1.819(1.320)	1.609(0.701)**	-3.067(0.758)***
	-2Log-Likelihood	288.666	464.266	473.942
	Chi-square	37.05**	63.88**	59.02***
	Sample size	394	394	394
	% of correct prediction	86	68.5	70.00

\*\*\* Significant at 1%, \*\* = significant at 5%, \* significant at 10%, standard errors are in parenthesis, coefficients represent log-odds or logistic regression coefficients

## 5.7 Discussion and conclusions

The purpose of this study was to examine farmers' awareness and perception of existing legislation governing on-farm trees in Cameroon and to further investigate whether proper enforcement of the law would affect their decisions to plant indigenous fruit trees on their farms. Results confirm the findings of Schreckenber *et al.* (2006a) that a majority of farmers are not aware of the legislation governing NTFP in Cameroon. They are also not aware of the rationale of government's impetus to impose restrictions on the exploitation and sale of the species.

Results also demonstrate that the few respondents who claim awareness do not have a good understanding of the regulations as they are actually confused about their real meaning and intentions. Low levels of awareness of regulations at producers' level could also indicate low level of enforcement of the regulations. This may be explained by the fact that permits are usually controlled along major highways. They are thus most felt by traders who transport produce from village markets to major urban and export markets. The danger of farmers' ignorance about existing regulations is that they cannot respect what they do not know. This makes the legal and regulatory system to lose credibility (Kuchta-Helbling 2000). Weak enforcement of laws governing access and trade in NTFP that impact on AFTP is a clear reason to question the relevance of these regulations.

Despite the low levels of awareness by Cameroonian NTFP/AFTP producers, our results show that forest dwellers were more informed about regulations than their savannah counterparts. This means that, although still much has to be done to develop informational instruments to make current and future laws governing trees known to local communities throughout Cameroon, efforts have to be multiplied in the savannah compared to forest zones. We base this conclusion on the fact that farmers in forests zones are more likely to be informed of regulations through other activities (conservation programs piloted by NGOs and the government) compared to their counterparts in savannah regions.

Based on Fishbein and Ajzen (1975) there is a normal assumption that the more favourable a person's attitude towards an object the more likely that person will behave positively towards that object and vice versa. The results of this study indicate that a significant majority of

farmers interviewed would not want AFTP to be subjected to the same regulations as NTFP which suggest negative attitudes towards NTFP regulations. Despite having negative attitudes towards these regulations, a significant majority declared that they will continue to plant the selected indigenous species even if the laws on permits were properly enforced. This is therefore in contradiction with the assumed strong relation between positive attitudes and positive behavioural intention as mentioned above. However the results are in line with other authors who hold that the situation in which one finds oneself would condition or constraint his behaviour (Diekmann and Preisendorfer 1998; Kaiser and Schultz 2009). In essence, a person's attitude would condition his behaviour in a general manner if the situational costs involved are low and when such behaviours are easy to make (Diekmann and Preisendorfer 1998). These results thus suggest that farmers will continue to plant the selected species despite adverse regulations because the species are important sources of livelihoods to them as has been reported by several authors (Russell and Franzel 2004; Schreckenberg *et al.* 2006a; Tchoundjeu *et al.* 2006). That is, it may be more costly in terms of livelihood needs for a majority of the sampled farmers to stop planting the species than if they had tolerated the regulations governing them.

Nevertheless, a good proportion (41%) declared they may stop planting the selected species if the laws on permits were properly enforced. This suggests that if permits were properly enforced, it would add to the bunch of physical, agro-ecological and socio-economic factors that may negatively affect farmers' on-farm tree planting decisions. This may be a negative incentive to current efforts aimed at encouraging farmers to include indigenous fruit trees, especially in their cocoa and coffee fields, as food and income diversification options.

The decision of farmers to accept permits and certificate of origin, and also the fact that they will not plant the selected species subject to obtaining permits, were found to be related to a number of socio-economic and demographic variables. However, the factors were not the same for different policy instruments, suggesting that these differences need to be taken into consideration in devising policies that may affect farmers with different socio-economic, ecological and demographic backgrounds. For example, even though it was found that farmers from the savannah compared to those from the forest zones were less likely to accept permits to sell AFTP or certificates of origin, no significant difference was observed between the intentions of respondents from the two zones to plant trees subject to permits. This means

that farmers, no matter their geographic origins, perceive property rights to planted trees in the same way whereby a common legislation would be binding for both regions.

The results demonstrate that, if a majority of farmers were to be aware of the legislation and if the regulations were to be properly enforced, it would not affect their tree planting decision. However we argue that the number of farmers who will not plant trees subject to legislation is large enough to be neglected. This is especially relevant at this period in time when on-farm tree planting is being encouraged, particularly to address food and climate change issues.

The main policy recommendation that can be derived from this study is that the Government of Cameroon together with development NGOs should develop informational instruments or other extension services to sensitise local communities of existing and new laws. Future laws should also carry agroforestry incentive-driven elements rather than being too prohibitive as is the current case with permits.

The importance of this study for future research is that it clearly demonstrates how specific elements of existing regulations can have an effect on farmers' decisions to plant indigenous fruit trees. Therefore, there is a need to integrate such elements in models studying farmers' decisions to adopt agroforestry technologies with a focus on indigenous fruit trees rather than generalising them under the framework of an institutional environment. By doing so, specific policy instruments that hinder tree planting can be properly identified and addressed.

One major limitation to this study is that it focused on indigenous fruit trees in farming systems. It would be interesting to know how farmers would react if the trees were timber species with no food and nutritional value. Furthermore, this study used the "stated preference approach" with one weakness being that intentions may sometimes not reflect actual behaviours. It is therefore recommended that in countries where specific policy and other regulatory instruments addressing trees on-farm have already been developed, empirical studies should be carried out to see how these instruments affect farmers' actual tree planting decisions. This can be very useful in understanding how tree planting regulations and incentives can contribute to, for e.g. climate change solutions. We however acknowledge that regulations are just one of a number of factors that may affect farmers' tree planting behaviour and should not be considered as a panacea to fully understand farmers' on-farm tree planting decisions.

## **Chapter**

# **6 Farmer Perceptions and Preferences about Land and Tree Tenure Security in Southern Cameroon**

## **Abstract**

Tenure security is often cited as an important factor that conditions farmers' decision to adopt/reject agroforestry technologies. Although some authors criticise the potential of land titles as an option to guarantee tenure security, others argue that evolving cultures and competition over land will create increased demand for land titles. Up till now, there is no information on whether farmers prefer either formal or customary institutions, as both compete to regulate access to, and ownership and security of, land and natural resources. This study attempts to provide such information by examining the case of farmers from two cultural backgrounds in Cameroon characterised by different levels of population density and intactness of indigenous local institutions. Results show that, even though existing traditional institutions provide enough security to encourage tree planting, a significant majority of respondents were in favour of land titles as a means to guarantee private ownership of land in the medium to long term.

Key words: formal/informal institutions; land titles, tenure security, farmers' preferences  
NTFP

This chapter is based on:

Divine Foundjem-Tita, Marijke D'Haese, Ann Degrande, Stijn Speelman, Amos Gyau, Zac Tchoundjeu, Patrick van Damme, Guido van Huylenbroeck. Farmer perceptions and preferences about land and tree tenure security in Southern Cameroon: to be submitted to Land Use Policy

## 6.1 Introduction

There exists hardly any literature on the adoption of agroforestry technologies that will not examine access to land and tenure security as limiting factors (Adesina *et al.* 2000; Place and Swallow 2002; Pattanayak *et al.* 2003; Nkamleu and Manyong 2005; Place *et al.* 2012). To emphasise the point, a recently published agroforestry agenda by FAO (Buttoud 2013), based on lessons learned from mix workshops, structured interviews with experts and detailed national studies from developed and developing countries, identifies land security amongst four critical factors that need to be addressed in order to advance agroforestry. While the relationship between tenure security and investment in agriculture is an open debate in land tenure literature, this chapter addresses the problem of tenure security through the lens of *institutional change*. According to Aldashev *et al.* (2012) positive analysis of institutional change remains a fundamental gap in the research agenda of the New Institutional Economics. An essential aspect of the problem is the degree of interaction between formal and informal institutions in the management of land and natural resources in developing countries.

In essence, many studies in developing countries show that formal institutions, especially those governing land, fail to take root because informal institutions represented by traditional chiefs do not wish to enforce them or simply because local people believe that custom is a more natural way of regulating the society (Firmin-Sellers and Sellers 1999; Platteau 2009; Aldashev *et al.* 2012). Within this context, the World Bank (2007) acknowledges the complexity involved in designing appropriate institutions that take into consideration efficient land use and multiplicity of rights for land users. As noted in chapter two, following Williamson (2000a) and Ostrom (2005), formal institutions are easier to change. But, in an environment where informal institutions play an important role in determining economic behaviour and interactions amongst individuals, the welfare effects of changes in formal institutions depend on the effect of these reforms in formal rules and regulations on informal institutions (Greif and Kingston 2011; Aldashev *et al.* 2012). In other words, if formal laws run counter to people's beliefs and customs they are unlikely to be followed.

Land reform is a broad term that comprises both land redistribution and land tenure reform. Land redistribution is an effort by governments to modify the distribution of land ownership, whereas land tenure reforms are aimed at changing the legal and institutional framework for



land administration (Binswanger-Mkhize *et al.* 2009). In sub-Saharan Africa, issues of land reforms principally centre on a redefinition of the provisions under which land is allocated and used. As a consequence, land redistribution only occurs in a few countries (Bruce 1986). In general, land tenure reforms are geared at increasing tenure security as shaped by the institutions governing land (World Bank 2007). The coexistence of formal (statutory laws) and informal (customary) institutions governing land in most African countries leaves doubts as what is the most acceptable institution for providing farmers' security over the land they exploit.

In this study, registering and issuing of land titles is considered as a formalisation of tenure security. There are arguments both for and against land reforms that aim at formalising tenure through land titles as an option to secure land. Bromley (2008a) describes formalisation of land as 'the wrong prescription for the wrong malady'. West and Wiley (1992) report that 'while titling is important in many cases, it is not appropriate in many others'. The examples they give suggest that farmers may not need individual titles to secure their land. Buttoud (2013) recommends government intervention to secure land rights through 'legal standards' but caution that formal land titles may not be appropriate. Cotula (2004) noted that some actors may have preferences for one form of institution while others may prefer another set-up. For example, urban dwellers may prefer formal land titles while rural people may feel that the traditional tribal system gives them enough land tenure security. It is clear that the role of formal institutions is being exaggerated by proponents of formalisation and underestimated by opponents. However, research has so far failed to assess from farmers' perspective whether and which of the systems and in what form gives them more security over their land and the resources generated from it. Put in another way, the question exists as to whether farmers believe that the land they are using is really THEIR land and whether they wish they were more secure? Or, do they feel that it is now unclear to whom the land really "belongs" and different people wish for a title to "prove" that it is theirs?

Cameroon, with an average annual population growth rate estimated at 2.08%, for 2012 ranks amongst the top 50 countries in the world with the highest annual population growth rates (CIA 2012). This may eventually lead to high pressure on land resources with a potential increase in land conflicts (ADB 2009). This may explain recent calls for major agrarian reforms in the country as announced by the head of state in his speech at the 2011 agro-pastoral show in Ebolowa (President of the Republic of Cameroon 2011). Therefore,

assessing the issue of land security may be timely to address relevant land policy problems in Cameroon especially as little has changed in the land tenure rules since the laws of 1974.

One of the areas where issues of tenure security are most complex is the forest environment. As illustrated in Chapter four, forest products may be both timber and NTFP but NTFP are also harvested from farms (AFTP). In addition, there is evidence that trees on farmers' fields do not only stem from natural regeneration, but some farmers are actually planting them. So there is a grey line whether NTFP are really wild forest products or privately owned crops i.e. AFTP (Belcher 2003; Leakey 2011; Foundjem-Tita *et al.* 2012b). In this regard, when issues of land are discussed, analysis is not only limited to the land itself but extends to the resources on it. For this purpose, NTFP and their direct relationship to agroforestry development are also studied in this chapter.

The purpose of this chapter is therefore to explore the concept of land tenure security as an incentive for agroforestry development. On the one hand, the study assesses how farmers from different cultural backgrounds perceive ownership of land within the context of a dual tenure-system of land governance in Cameroon. At this stage, it is important to recall the importance of the tribal environment (social embeddedness) in devising informal institutions regulating rural land and trees, as discussed in chapter two i.e. the conceptual framework as well as the research setting in Cameroon characterised by its different pre-colonial, colonial and cultural backgrounds (see chapter three). On the other hand, farmers' preferences for either formal (state issue land title) or customary institutions as mechanisms to enhance their rights over land for which they claim ownership are elicited. In meeting these objectives, the study also attempts to explain whether farmers' resistance to register their land despite opportunities provided by the law is a reflection of their preference for informal customary systems over formal land titles.

The rest of the chapter is organised as follows: first, background information on formal and informal institutions governing land and trees (NTFP) in Cameroon is presented. This is followed by a presentation of the concept of ownership and possession of land leading to a discussion of arguments in favour of and against land title programs. It goes on to present arguments why customary systems have to evolve to land titling. The methodology and outline of the study area comes next, followed by a discussion of results and conclusions.

## **6.2 Institutions governing land and NTFP resources in Cameroon**

### **6.2.1 Institutions governing land**

Rights to land in Cameroon are defined in two possible ways i.e. traditional (customary) institutions and state law (Tchapmégni 2007). Prior to the colonial period, land in Cameroon was assigned and managed by community chiefs or land managers. It was also reassigned when new circumstances dictated. Chiefs were considered as ‘owners’, guardians or trustees of the land under their jurisdiction (Fisiy 1992; IFAD 2008; USAID 2010). Land was considered as an inalienable community asset that was handed down from one generation to another. It was difficult to talk of private ownership of land during this period, as individuals only had a right of enjoyment to satisfy their food and housing needs (ADB 2009).

Individual ownership of land was introduced during the colonial period. As already described, Cameroon alternately went through German, French and English colonial regimes. Each of these colonial occupiers introduced a different land registration system in their occupied zone in order to serve their specific interests (ADB 2009). The Germans had primarily initiated registration in the so-called ‘*Grundbuch*’ as a principle to secure tenure. The French introduced the transcription system, together with the customary land rights recognition system and the land registration systems. The British enacted the rights and native ordinance which constituted the right of occupancy and gave each and every Cameroonian the right to occupy and use land. Because of resistance from traditional forms of leadership in the British territory, all unoccupied land was later declared as customary land in which case traditional authorities became custodians of the land (Fisiy 1992; ADB 2009; USAID 2010).

After unification of British and French Cameroon in 1972, the 1974 *Land Ordinance* was passed to harmonize the different land tenure systems in the country. The 1974 reform had the merit that it detribalised access to land and granted full ownership right of land to all Cameroonians (ADB 2009). Section 2 (1) of the 1974 *Land Ordinance* of Cameroon states that ‘the state shall be the custodian of all land’. This can be interpreted as an attempt to overthrow the chiefs as ‘custodians’ of the land under their control. In this context, Fissy (1992) asked how effective the state can be as custodian of all land.

Based on the 1974 *Land Ordinance*, private ownership of land is only granted if a person claiming rights to a piece of land has a title deed. It stipulates that all individuals who had peacefully occupied and productively used land prior to 1974 may register and receive legal title deeds for that land. The law further specifies that all unregistered land belongs to the state. By 2008, only about 125,000 land title certificates had been issued (USAID 2010). This represents barely 2% of all land in the country. With respect to rural land, only about 3% of it is registered and mostly in the names of large commercial plantations (ADB 2009; USAID 2010). Therefore, based on the 1974 *Land Ordinance*, a majority of Cameroonians, especially those in rural areas, can be considered to be tenants or to be using national land because they do not have land titles.

Despite the major amendments made through the 1974 *Land Ordinance*, customary systems of managing land still prevail in rural areas and registration of land is subject to customary recognition (Firmin-Sellers and Sellers 1999). This means that community members and chiefs have to testify that a given piece of land belongs to a given person before a land title is delivered. It is evident that besides the state that guarantees ownership through title deeds, there exist analogous customary systems that people consider legitimate.

### **6.2.2 Institutions governing natural resources, specifically NTFP**

In contemporary Cameroon, resources on land, especially forestry resources are governed by provisions in the 1974 *Land Ordinance* as well as the 1994 *Forestry Law*. The latter considers the forests as state property while customary regimes regard the forest as a common or communal resource. The 1974 *Land Ordinance* grants users' rights to local people on all national lands, but such rights can be withdrawn to serve the "public interest." In this regard, Wily (2010) concludes that the state has failed to recognize the property rights of local communities over forest resources although they had been ascribed to them by the customary regime.

Based on customary systems, NTFP are considered as common pool resources. Access is free for all members of the community, but may be restricted to non-members of the community (Brown and Lassoie 2010). Members of the community access the resource on a 'first come, first serve basis'. However, with increasing commercialisation, most holders of customary

land titles being groups or individuals are also considered as owners of the NTFP resources located on the land and will thus try to limit access by others to the latter.

A fair number of studies have addressed issues of land tenure and property rights of forests and forest resources in Cameroon (Ashley and Mbile 2005; Nguiffo *et al.* 2009; Oyono 2009; Oyono *et al.* 2012). Only a few (Nkamleu and Manyong 2005; Kaziangaa and Masters 2006; Van den Berg *et al.* 2007) have actually attempted to compare land tenure of forest with other land use systems, particularly farmland. The general perception that NTFP, especially indigenous species, are not planted but harvested from the wild, usually from distant fields with less-secured rights (Belcher and Schreckenberg 2007) may undermine the importance of agroforestry as a source of some species that originally existed only in the wild. It may also divert attention to solve property rights issues of AFTP. Additionally, such misconception may contribute to the development of negative policies or regulations governing AFTP.

### **6.3 The debate about formalisation and customary tenure as measures of secure tenure**

#### **6.3.1 The difference between possession and ownership of land**

According to Bromley (2008a), understanding the concept of formalisation requires that one first understands the difference between possession (use) and ownership of a resource. It is generally accepted that tenure security forms the basis of ownership. In this regard, one of the major criticisms of land policies in Cameroon (Wily 2010) and some other African countries (Burnod *et al.* 2012) is that occupied land without a title deed is possessed and not owned. For Cameroon such occupied land without a title deed is termed “national land” (ADB 2009).

According to Bromley (2008a), ownership is sanctioned by an authority or a larger community that recognises that an asset belongs to somebody, while possession is guaranteed by evidence of continuous use. The example he cites is that the mere fact that one uses a rented car everyday (possession) does not guarantee that s/he owns the car. He argues that there should be empirical evidence distinguishing the owner from a user; such evidence can be a title deed. However, Bromley (2008a) complicates his analysis with the conclusion that a

title is meaningless without the full backing of the authority that issues it. In other words, this means that the strength of a title to claim property/ownership is as strong as the legitimacy of the authority issuing the title.

Proponents of titles, such as de Soto (2000), claim that the lack of a title reduces incentives to invest in land or land improvement. It is also assumed that formalisation of land ownership guarantees security over it and would transform rights of possession to rights of ownership. ODA (1996) asserts that in many situations, the most reliable way to secure all other rights over land is to secure the “rights of ownership”. Furthermore, proponents of titling of land claim that having a title facilitates access to loans (used as collateral), even though it may be useless in cases, where loans are not available or where land is not or cannot be used as collateral (West and Myers 1992).

Opponents of formalisation, on the contrary, argue that titles weaken or block secondary, women’s or community rights (Place and Swallow 2002; World Bank 2007; IFAD 2008; Mwangi and Meinzen-Dick 2010). Bromley (2008a) adds that ‘formalisation erodes and displaces existing social networks and arrangements’. Additionally, empirical evidence on the relationship between formalisation of land tenure and increased investments is contradictory. Some literature shows that access and secured rights to land are presumed handicaps that limit investment on land, especially in developing countries (Besley 1995; Place and Swallow 2002; World Bank 2007). Other studies, however, have failed to bring out this relationship (Migot-Adholla *et al.* 1991). In general, evidence on the relationship between tenure security and investment on land is not so robust (Bromley 2008a).

Customary land tenure refers to the system through which most rural African traditional communities own, possess, access, regulate, use and transfer land rights. Unlike statutory laws, such rights originate from and are sustained by a community (Wily 2011). Advocates of customary tenure argue that it provides a solid foundation for development within a given economic, political and sociological context. Opponents of customary tenure systems hold that although these systems have stood the test of time across Africa, they have evolved to grant increasingly narrow and less specific rights to landholders. In other words, this means that customary systems should evolve towards a form of titling (Migot-Adholla *et al.* 1991).

The preceding section demonstrates that in Cameroon, just like in many other African countries, land tenure systems are influenced by customary, colonial and post-colonial rules. As a consequence, there also exists a dual system of formal and customary institutions governing access to and security of land and resources. At this stage, it is important to come back to the general introductory question and contextualise it for Cameroon. That is: how do Cameroonian farmers perceive and interpret ownership and security of land it is claimed they *possess* instead of *own*? Do they feel they *own* the land and do they feel they have *security* over the land they possess? If not, what are the sources or determinants of insecurity and does this insecurity limit them from making investments on the land? Under what circumstances would farmers prefer land titles to customary system as a means to guarantee their tenure security?

### **6.3.2 Measuring tenure security**

The concept of tenure security is complex. It is defined and measured in different ways (Place and Swallow 2002; Arnot *et al.* 2011). It is even argued that it is the variation in measuring the concept that makes it difficult to find appropriate empirical evidence on the relationship between tenure security and investment in land (Arnot *et al.* 2011). Sjaastad and Bromley (2000) state that security of tenure is determined by the assurance of rights rather than its substance. The notion of assurance, as used and measured in most empirical studies, refers to the probability or perceived risk of eviction and cases of conflict with adjacent neighbours (Mendelsohn 1994; Kung and Liu 1997; Sjaastad and Bromley 2000). It is worth noting that even in developed countries, owners can be evicted. The essential difference is that they receive compensation. This may not be the case in African countries because they do not have formal/state land titles. Substance captures: the degree to which rights are transferable; legal land title; type of land tenure and/or the method of acquisition (Arnot *et al.* 2011). The latter authors also report that the fact that most researchers use both substance and assurance measures to address tenure security suggests a correlation between the two to exist. However, this assertion has not been tested empirically. In this study, both the aspects of tenure assurance and substance are assessed through a survey (see questions in section 6.5.2).

## **6.4 Factors that may influence farmers' choices for formal or customary tenure security**

### **6.4.1 Increasing population and the evolutionary land rights theory**

Legal anthropologists and sociologists argue that the custom of a people is far from being static and continuously evolves under the pressure of a changing environment (Aldashev *et al.* 2012). Based on this precept, this study adopts the evolutionary theory of land rights by Platteau (1996) to explain factors that may cause farmers' preferences to shift from customary tenure to land titles. The analytical assumption of the latter theory is that the combined effect of population pressure and increased land scarcity will somehow push people to develop, adopt or freely choose new institutions to protect and also secure their rights to land. In other words, when land becomes scarce, landholders begin to feel uncertain about their customary rights and disputes of ownership of land, inheritance, and land boundaries increase. In such a situation, Platteau (1996) assumes that the population turns to claim private ownership of land and consequently will demand for formalisation. Under these circumstances it is assumed that farmers faced with a situation of high population density or who have had a conflict will abide to government policies of formalising land titles in order to reduce transaction and social costs (enmity between neighbours) involved in settling disputes in the absence of such a proof.

The population of Cameroon has evolved from 10.5 million inhabitants in 1986 to 19.5 million in 2010. Population density has increased from 22 to 41 inhabitants/ km<sup>2</sup> over the same period. These absolute figures, however, mask substantial variability within the country. Regional population densities vary from 7 inhabitants /km<sup>2</sup> in the East region to 125 in the West region of Cameroon. Since population densities of regions not necessarily reflect actual situations in the villages studied, the densities of the divisions (smaller administrative units) to which the villages belong were used in order to test the effect of population densities on respondents' perception and preferences.



### 6.4.2 Cultural and political/historical diversity

In the development literature, diversity is often measured with regard to language differences (ethnicity), as well as agro-ecological differences (Place and Swallow 2002; Alesina and La Ferrar 2004). Ethnicity is important to understand land tenure because informal rules governing land under customary regimes are seldom binding beyond a given ethnic group (Wily 2011). Thus, it is important to capture how cultural diversity affects farmers' perception of land ownership and security. Cultural diversity in Cameroon can be traced as far back as to the country's pre-colonial and colonial history.

Platteau (2009) described the indirect rule system used by colonial masters to influence the social and political structures of African societies. The colonial masters manifested their influence by increasing the power of local-level authorities over communities at the expense of pre-existing centralised political institutions such as kingship. Enhancing the power of local-level authorities meant that they were charged with maintaining law and order on behalf of the colonial state to which they became directly accountable. In this respect, local-level authorities were expected to advance the economic agenda of the colonial leaders. In some cases therefore, these local authorities were appointed to replace the local chiefs when indigenous chiefs did not exist or were not sufficiently compliant. The latter is characteristics of the French forest regions in Cameroon.

Cameroon has about 250 ethnic groups with an ethnic fractionalisation score of 0.89 which is higher than the sub-Saharan African average of 0.65 (Posner 2004). The higher this score, the lower the probability that two individuals drawn from the same population will speak and understand the same language. However, this great diversity of ethnic groups in Cameroon can be clustered into three main groups based on their history and form of leadership (Yahmed *et al.* 2006). These groups are:

- people with a *hierarchical system of governance* which groups inhabitants from the North West, West, parts of Adamawa, North and Extreme North regions;
- people with a *decentralized system of governance* consisting of people from the forest zones (South, Centre and Eastern regions); and
- people with a *mixed system of governance* influenced by western cultures made up of people in the coastal zones (Littoral and South west regions).

We assume that belonging to one of these groups affects people's attitudes towards land tenure. It has been documented that while many customary systems have been over time eroded by social, economic and political factors, others have been very dynamic and responsive to changes (Cotula *et al.* 2004; Platteau 2009) whereas others resisted cultural erosion. In Cameroon, only people with a traditional hierarchical system with strong leadership and characterised by descendants from savannah regions (West, Northwest and the three Northern regions) are recognised to have powerful leaders or chiefs whose source of legitimacy is vested in myth and ritual powers (Fisiy 1992; Aletum 2004). This is in contradiction with the mixed and decentralized systems of traditional authority which are described by anthropologists as 'acephalous' whereby the latter traditional chiefs were appointed by the colonial administrators.

Due to colonisation and administrative influence which has eroded the cultural values bestowed on traditional chiefs from the forest regions, they often have difficulties to impose their power as village leaders to manage their subjects, land and natural resources (Van den Berg *et al.* 2007). Opposed to this, traditional leaders with a hierarchical form of leadership have succeeded to maintain firm spiritual and moral authority over their people. This has created a symbiotic relationship between the leaders in the savannah and their subjects. However, with the existence of the State as an additional source of power and control over the traditional authorities in the savannah, their authority has also gradually been eroded (Fisiy 1992). This is, however, less the case for the leaders in the savannah compared to forests leaders as the two sources of authority (customary and statutory) compete to regulate the society (Fisiy 1992; Aletum 2004).

The above theoretical, historical and cultural arguments give rise to the following hypotheses:

- a. farmers from areas with high population density will have a higher preference for formal land titles over customary rights in comparison with farmers from low density areas;
- b. farmers who have had land conflicts will rather have land titles compared with those who have not had such experiences;
- c. farmers from the savannah with a traditional hierarchical system of governance will opt more for the customary system rather than for formal land titles compared with those from the forests zones where there is lower respect for the traditional system; and
- d. there exists a correlation between variables of tenure assurance and substance.

## 6.5 Data and description of questionnaire

### 6.5.1 Choice of sites and respondents

Data were collected from five administrative regions in Cameroon located in two major agro-ecological zones and clustered around two major ethnic groups: the savannah comprised of the West and Northwest regions, and the humid forests made up of the Centre, South and East regions (Table 6.1). The savannah regions were chosen to represent respondents who have undergone less cultural erosion compared to the forest zones where respondents have been subjected to high cultural decay. Respondents were chosen from these two areas to test whether people from cultures that have undergone less cultural erosion will have preference for customary tenure as custodian of tenure security compared to those that have undergone high cultural erosion and who are hypothesised to prefer land titles to customary tenure. For details about the choice of regions and sampling technique, see chapter 3.

Table 6.1: List of villages, population density, historical and cultural characteristics

Region	Division	Divisional population density (inh/km <sup>2</sup> )	Regional Population density (inh/km <sup>2</sup> )	Agro-ecological zone	Colonial history	Form of leadership
North West	Bui	140	100	Humid Savannah	English	Hierarchical
	Momo	77				
West	Nde	62	125	Humid Savannah	French	Decentralized
	Bayangam	184				
Centre	Lekie	95	50	Humid Forests	French	Decentralized
South	Mvila	20	17			
East	Yokadouma	4	7			

## 6.5.2 Data collection tools

A questionnaire was designed to capture various aspects of land ownership and tenure security. In order to assess farmers' perceptions of land ownership, they were asked to indicate who among predefined choices (individuals, government and community or chiefs/ancestors) they consider to be the owner of land in their community. Proof of individual ownership was measured by asking if a farmer or a given household has any evidence to show that a given piece of land belongs to an individual/household. This could be a sale certificate, land title or community recognition.

It was also assessed whether farmers had exclusive rights over the land they possessed by asking respondents whether they could sell any part of their land without seeking approval from members of the family or community other than their immediate household. Following Migot-Adholla *et al.* (1991), the right to sell in this case was considered to represent a bundle of rights as it was assumed that if a household has the right to dispose of land it can also have the right to decide to rent or choose whatever crop to plant on it. Excludability on NTFP resource was assessed by asking respondents if they could harvest or gather NTFP for either personal or commercial consumption from a piece of land that they considered to belong to another household.

In order to assess farmers' attitude towards land titles (like or dislike), they were directly asked to indicate if they accept the current disposition where land ownership is guaranteed by a title. Tenure security was assessed by asking questions related to fear of eviction (Sjaastad and Bromley 2000; Arnot *et al.* 2011) by either the Government or traditional authorities. Farmers were also asked to indicate what their choice would be if they were given an opportunity to choose between either the customary or the formal system of securing land. In latter case, they were asked to justify the reasons for their choices. Incidences of conflict were also recorded as a measure of tenure insecurity.

Data were entered and analyzed in SPSS version 17. Descriptive statistics were used to describe the various responses. Logistic regression was used to test the hypotheses. Because of multicollinearity, several variables were excluded from the logistic models.

## 6.6 Results and discussions

### 6.6.1 Method of obtaining land

Results show that 68% of households possess between two and three farm plots. The plots (940 in total) were principally crop fields (36%), cocoa/coffee fields (28%), home gardens (21%), fallows (11%) and eucalyptus/oil palm fields (5%). Transfer of land between family members was the principal mode of acquiring land, as 71% of the plots had been inherited, whereas only 13% had been newly created (persons who clear land and claim ownership through customary regimes). Land purchase (6% of plots) was uncommon in all investigated areas, as were gifts (7%) and land leasing (3%).

There was a significant relationship between region of origin of the respondent and method of obtaining land [ $\chi^2$  (20, N= 940) = 501.18,  $p= 0.000$ ]. More plots had been newly created in the East and South regions and to a lesser extent in the Centre than in the West and Northwest (Figure 6.1). The first two regions are those with the lowest population densities. So, the practice of opening new farms is an indication that one can still find unoccupied land in these areas. No plot was recently created in the two regions with the highest population densities. Purchasing land was relatively common in the Northwest and Centre regions compared to the others. These are also areas of high population density. Although the West region has the highest population density, only a few plots were bought here compared to villages in the Northwest and Centre. This may be related to the fact that the customs of the Bameliké (people from the western region of Cameroon) oblige family heads to preserve land for the family (Firmin-Sellers and Sellers 1999). Although this is common in Cameroon and Africa, it may be more strictly applied in the Bameliké territory, probably because of the great pressure on land following high population density which is estimated at 125 inh/ km<sup>2</sup>.

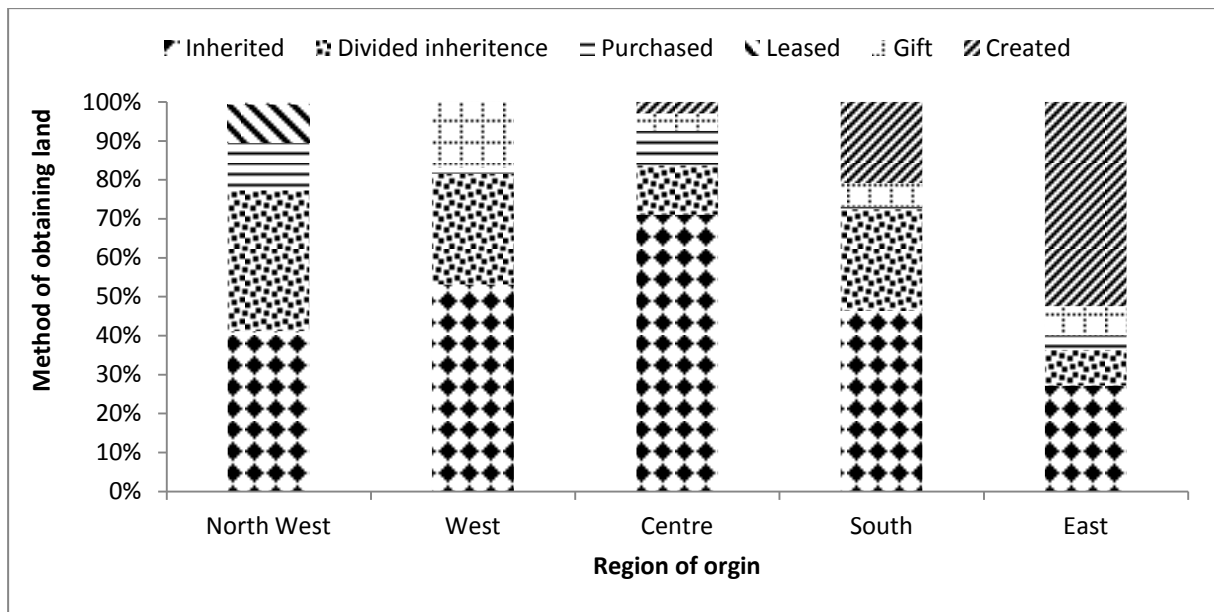


Figure 6.1: Method of acquiring land as a function of region of origin

Regarding farmers' rights to sell land, 81% of the plots could not be sold without receiving approval from members outside of the household. This suggests that even though households have use rights over land, the right to sell is a more regulated decision as relatives within the households immediately concerned by this decision have to be consulted. There was a significant positive relationship between the right to sell and the method of land acquisition [ $X^2 (N= 932, 5) = 48.99, P= 0.000$ ]. Plots that were initially bought were indeed more likely to be sold than those that had been inherited (Figure 6.2). The method of land acquisition can thus be considered as a proxy for transferability.

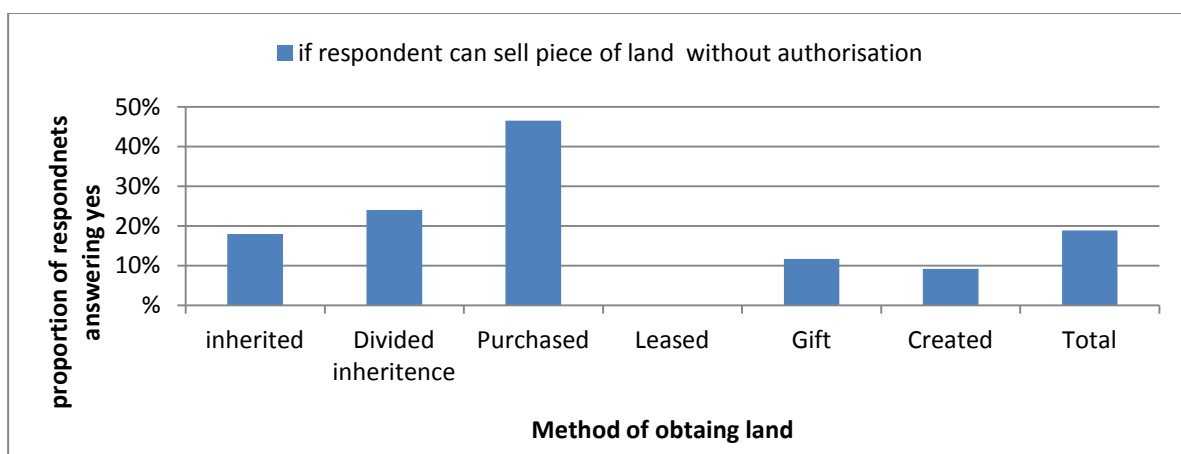


Figure 6.2: Farmer decision to sell land as a function of method land was initially acquired

## 6.6.2 Perception and proof of ownership of land

In this part, we assessed who, according to farmers, owns and assures the rights over their respective land. Results show that a majority of respondents (76%) did not consider themselves as owners (Figure 6.3). That is, 43% perceived land as the property of the community, ancestors or gods represented by the chiefs. Thirty-three percent thought that the government is the owner of all land while a significant minority (24%) believed that it is the private property of the individual exploiting the land.

There was a significant relationship between respondents' region of origin and their general perception of land ownership [ $X^2$  (8, N=394) = 60.37,  $P = 0.000$ ]. A significant higher proportion of the farmers from the South and Centre regions compared to those of the other three regions believed land belongs to individuals. As expected, more farmers from the West and Northwest regions held that land belongs to either their ancestors, chiefs or the community (Figure 6.3). Unlike expected, a higher proportion of farmers from the East believed that the Government is the owner of all land.

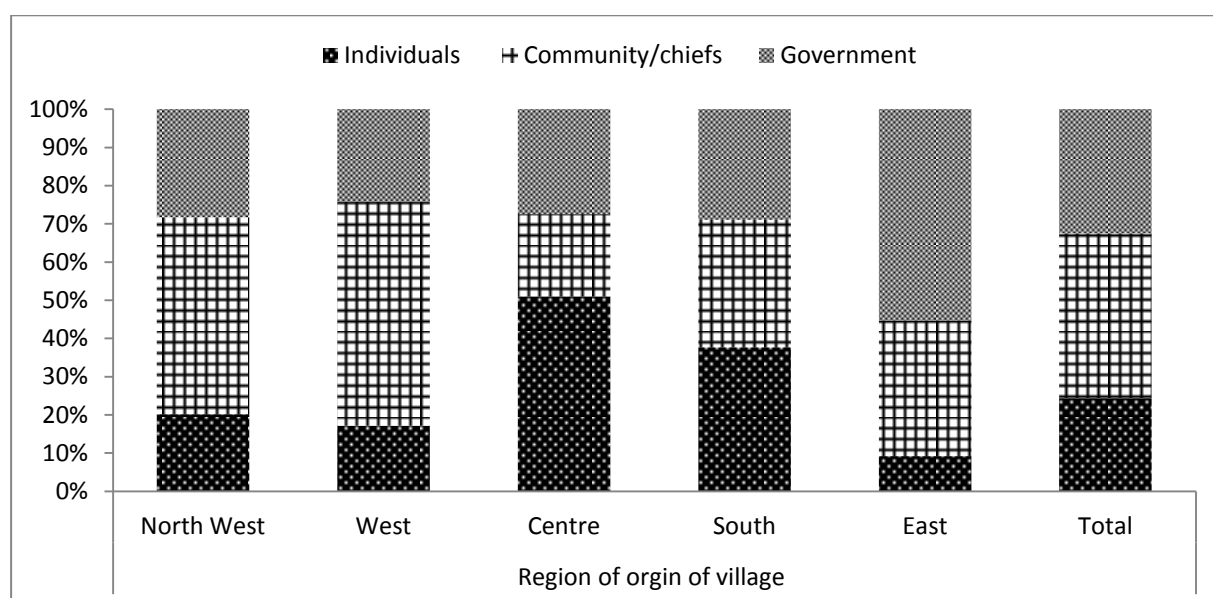


Figure 6.3: Farmers perception of who owns their land

The high proportion of farmers ascribing land ownership to the State in the East region when compared to the other two forest regions may be related to the intensity of Government activities there. The East, is considered the richest in natural resources, but is paradoxically

generally known as the least-developed region in Cameroon. As such, local communities still live very close to forests and protected areas with frequent government activities monitoring access into the forests. Such government activities may have influenced their perception of ownership of land. As mentioned earlier, people from the savannah with a hierarchical system still have high attachments to and respect for traditional institutions. In this part of the country, all land is claimed to belong to the traditional rulers. In later sections, we will verify whether farmers who feel they own land also feel more secured over the land.

The logistic regression results (Table 6.2, model 1) show that population density and the traditional form of leadership had significant positive effects on farmers' perception of land ownership. Odd ratios show that farmers from the forests regions (Centre, South) with a traditionally decentralized system of government were 2.2 times more likely to accept that the land they are exploiting belongs to them, compared to those from the savannah with a traditional, hierarchical system. In the same line of thinking, farmers from densely populated areas were 1.10 times more likely to claim individual ownership compared to those from areas with low population density.

Table 6.2: Results of logistic regression analysis indicating beta coefficients and standard errors in parenthesis

Variable	Model 1	Model 2	Model 3
	Belief of ownership = individual	Positive attitude to land title	Preference for customary system
Land Conflict (1= Yes, <b>0= No</b> )	1.55 (0.274)*	3.67 (0.437)***	-0.42 (0.254)*
Political history (1= French, <b>0= English</b> )	1.44 (0.427)	0.71 (0.411)	-0.23 (0.345)
Form of leadership (1= Decentralised, <b>0= Hierarchical</b> )	2.22 (0.401)**	1.36 (0.431)	-1.01(0.339)***
Population density (Mean : 65, s.d = 58)	0.01(0.003)**	0.99 (0.004)	0.405(0.260)
Constant	-2.47 (0.488)***	1.79(0.148)***	-0.714(0.416)*
-2Log-Likelihood	365.400	277.353	440.755
Chi square	13.63***	19.599***	17.105***
Sample size	338	338	338
% of correct prediction	75	84	60

\*\*\* Significant at 1%, \*\* Significant at 5%, \* significant at 10%, N/B base category are in bold



### 6.6.3 Farmers' attitudes towards and preferences for tenure security

#### (i) Attitudes towards land titles and preferences between customary security and land titles

Ninety-one percent of the plots had no land certificates, 7% had sale certificates<sup>2</sup> and only 2% had land titles. As mentioned above, introducing land titles was part of the 1974 land ordinance, which gave all Cameroonians the opportunity to own land. In this section, we verify if and whether the low percentage of land titles means that farmers are not in favour of land titles and why.

When asked whether or not they like the policy of promoting land titles to secure ownership of land, 84% percent answered yes and 16% no. A more interesting question is whether farmers would change their views if the option of land titles was presented as a hypothetical choice. In this regard, respondents were asked what would be their choice if they had to choose between statutory laws with emphasis on land titles and customary regimes characterised by community recognition and testimony of ownership, with amongst others the planting of trees on a given piece of land as a means to guarantee security. Although a significant majority (59%) went for the formal system [ $X^2$  (N= 338, 1) =10.1, P = 0.001] compared to 41% who chose the customary system, results indicate that 25% changed from land title to customary system when they were subjected to a choice scenario. A larger proportion of those who shifted to the customary system was farmers from the savannah region as shown by logistic regression analysis. The logistic regression results (Table 6.2 model 3) show that compared to people from the savannah region, those from the forest zones were less likely to accept customary forms of tenure security.

Logistic regression (Table 6.2 model 2) also shows that while all other explanatory variables (form of leadership, political history, customary tenure and population density) had no significant effect on farmers' positive attitudes towards land title, the effect of previous experience with land conflict was positively significant. Odds ratios show that farmers who had gotten land conflict were 3.7 times more likely to prefer land titles compared to those with no such experience. Even though population density had no effect on farmers' positive

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<sup>2</sup> A Sale certificate is a written or typed document signed by law a recognised enforcement authority (usually police or the gendarmerie) attesting that party x sold a piece of land to party with ABC and C as witness. The document is signed and dated by all contracting parties and their witnesses. It carries an official physical stamp but it is not a land certificate.

attitude towards land titles, the positive and significant effect of previous land conflict on farmers' preferences for land titles thus seems to support the evolutionary land rights theory (Platteau 1996).

Respondents gave a number of reasons to justify their choices. Fifty-six percent of them said they would prefer the formal system because they have lost confidence in the traditional system as nowadays it is easy to corrupt traditional rulers and community members to decide in favour or against a given person in case of competing claims over a piece of land. One farmer during the interview said that

*'land titles are preferable because with development and quest for greener pastures, most youths migrate to cities and even abroad whereas the older generation that governs the systems is dying out. You can lease your land to somebody and s/he works there for ages and when your children return to claim their land, there will be nobody to testify that the land is yours'.*

One of the major reasons that proponents in literature of land titles put forward is that farmers can use land titles to borrow money (Knox *et al.* 2002). However, only 1% of respondents mentioned this as a reason. This is not necessarily a justification to those authors who think that land titles may not be useful in borrowing money especially in the absence of a formal credit market. Instead, it may mean that in the absence of land titles there are no credit markets so the importance of land titles as collateral is underestimated. Another 3% of respondents thought that land titles provide enough security in case one's land is expropriated by the government because government will pay compensation following such a case. Twenty-four percent of the people interviewed preferred the customary system because it involves very few procedures. Like Bromley (2008a) suggested, some respondents (4%) opt for the traditional system arguing that it reinforces solidarity amongst community members. Twelve percent preferred the customary system for convenience as they say they are used to it.

Farmers gave a number of reasons to justify why they do not have land certificates. These include lack of adequate information on the procedures (32%); long and complicated procedures (27%); a lot of corruption involved in the process (22%); and finally, distance to urban centres (19%). One farmer proposed that *'if land titles could be simplified like national identity cards, everybody would have one for his land and the question of whether a given*

*land belongs to x or y becomes as easy as proving that a given person on the street is a Cameroonian or a foreigner’.*

ii) Assessment of tenure security based on risk of eviction

Sjaastad & Bromley (2000) emphasized that for tenure security to survive as a coherent concept, the element of assurance measured by lack of fear of eviction should be given more consideration compared to aspects of substance which take into consideration ‘breadths of rights’. Tenure security measured through assurance is relevant because it is the fear of eviction that may stop a farmer from investing on a given piece of land for which he claims ownership (Sjaastad and Bromley 2000; Knox *et al.* 2002; World Bank 2007). In this regard, farmers’ perceived risk of eviction by either statutory authorities (the Government) or traditional authorities including members of the community (using customary laws) was assessed. It was found that only for 4% of all their plots farmers were afraid they could be evicted by members of the community or traditional authorities. On the other hand, on 46% of their plots farmers were afraid of government eviction.

Regression analysis was used to characterize those farmers who were afraid of eviction by government (Table 6.3). Results show that farmers who claimed individual ownership and those who asserted their land belongs to traditional chiefs or to the community were less afraid of government eviction, compared to those who think it is government land. This is simply because they have trust in their traditional institutions which state that all land belongs to the community headed by the chief. This symbolic perception of ownership of land simply portrays the community and the chiefs as protectors of individual rights and does not necessarily mean that all land is communal land or that the chief has rights to all land in the community (Fisiy 1992). Although not significant, regression results also illustrate that respondents with either land titles or sales certificates (signed by the police) were less likely to be afraid of government eviction. This is probably because, as argued by Bromley (2008a), they have some form of empirical evidence which they can use to claim ownership that is recognized by the government.

The logistic regression in table 6.3 also tests the proposition put forward by Arnot *et al.* (2011) that the fact that scientists use both content and assurance measures to assess tenure security means that both constructs may be correlated. We found no such relationship

between the assurance measure (fear of eviction), and content measures (i.e. the right to sell land and proof of ownership).

Table 6.3: Logistic regression model of factors affecting fear of eviction by government

Variable	Exp(B)	S.E
Land Conflict (1= No, <b>0= Yes</b> )	1.010	0.007
Right to sell (1= No, <b>0= Yes</b> )	0.852	0.759
Proof of ownership of land (1= community, <b>0= land titles</b> )	0.790	0.802
Belief about ownership (1= individual, <b>0= Government and community</b> )	0.240***	0.189
(1= community , <b>0= Government and individual</b> )	0.360***	0.168
Form of leadership (1= Decentralised, <b>0 = hierarchical</b> )	1.120	0.002
Population density (mean = 65, s.d 58)	0.998	
Constant	-2.476 (0.488)***	
-2Log-Likelihood	1196	
Chi square	80.410***	
Sample size	935	
% of correct prediction	65%	

\*\*\* Significant at 1%, \*\* Significant at 5%, \* significant at 10%, N/B base categories in bold

## 6.7 Main source of exploitation of and specificity of rights to NTFP resources

### 6.7.1 Main sources of NTFP

The results of this study confirm those obtained by Clark and Sunderland (2004) and Van den Berg et al. (2007) that NTFP are harvested from various sources among which natural and secondary forests, crop fields, cocoa and coffee fields. One major criterion used by Belcher and Schreckenberg (2007) to differentiate NTFP from other agricultural produce is the magnitude of wild harvesting usually from distant fields with less-secured rights to the forests. Results obtained seem to contradict the wild origin at least for the studied NTFP, as 33%, 25% and 15% of respondents declared that their major sources were from cocoa/coffee fields, crop fields and home gardens respectively (Figure 6.4). Only 11% harvest/collect from what may be termed wild sources (forests/community forests).

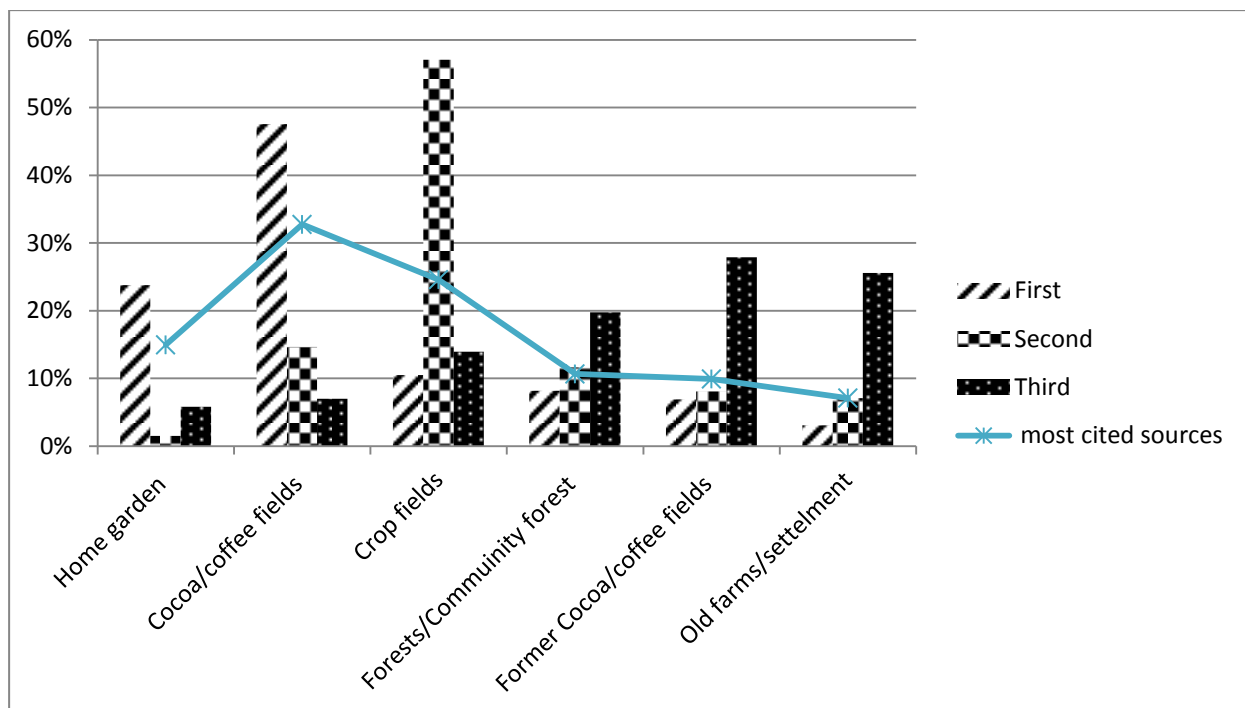


Fig 6.4: Most important sources of NTFP listed by farmers

Although most of the trees generating NTFP on land for which farmers claimed personal ownership may come from natural regeneration, results show that some farmers had effectively planted trees, confirming other studies that farmers are actually involved in domestication of NTFP (Leakey *et al.* 2004). Out of the 394 farmers we studied, 40% had planted at least one of the studied species since they took over the land from their parents (Table 6.4) whereas 88% had inherited at least one tree. No historical data existed to show if the inherited trees had been planted or nurtured from wildings. However, these data demonstrate that farmers are actually planting trees.

Table 6. 4: Cross table analysis of total number of trees from studied species inherited as a function of total planted

Number of trees inherited	Number of trees planted				Total
	0	[1-10[	[10-50[	50+	
0	28	7	8	3	46
[1-10[	107	41	12	1	161
[10-50[	98	21	30	6	155
50+	4	2	11	15	32
Total	237	71	61	25	394

### **6.7.2 Rights to NTFP on farmers' land**

Most households have exclusive rights over the NTFP that are found on all the land for which they claim to have private ownership. Only 13% and 14% respectively, agreed that they can harvest or collect the selected species from another person's farm for either home consumption or for commercial purpose without prior authorization. We argue that high prevalence of exclusive rights is, an incentive to the process of domestication or tree planting. This is true because with such rights farmer investments in NTFP are secured. In effect, other studies have reported that NTFP, especially gathered from indigenous species on individual farmland, can be accessed by all in the community. This is because such trees were originally perceived to grow naturally or to be a gift from God (Brown and Lassoie 2010). They could thus be considered a common property. Discussions during interviews show that restricted access is limited only to those NTFP that are highly commercialized. For example, one farmer explained that he allows people to collect the fruits of *Pentaclethra macrophylla* (common name: *ebae*) from his farm. He does so because he does not know to whom and where to sell them himself. He said that once he identifies a market, he would put an embargo on the species. This confirms the proposition of Sjaastad & Bromley (2000) that rights within individual plots are specified based on the perceived socio-economic importance of the specific resource. This means that by increasing precision and details of specific rights on a given plot or resource they are eventually removed from the public domain.

### **6.7.3 Relationship between the decision to plant trees and assurance and breadth of rights over the land**

The relationship between the number of trees planted and tenure security could be tested using an econometric model. However, in this study this relationship was assessed by directly asking farmers if fear of eviction stops them from planting trees. Only 3% said yes. This oral method was chosen because; the numbers of trees planted recorded here, were only for the studied species and not for the total number of trees planted. Similarly, when asked whether lack of land was an issue that stops them from planting trees, 29% of farmers interviewed said yes, while 71% said no. These results suggests that as far as land is concerned, and while tenure security may be an issue, a more important problem to solve in the medium to near

future may be access to land. This is exacerbated by the fact that land markets are almost non-existent in most of the studied villages as exemplified by the way farmers acquired land.

## 6.8 Conclusions

This study assessed farmers' perception of the concept of land ownership and tenure security as determinants of agroforestry development. We found that farmers in Southern Cameroon most often acquire land through family inheritance as very little land is bought. In most studied villages, land markets are almost absent. When they are present, they are constrained by customary institutions rather than formal policies and regulations because by custom families have to reserve land for their progenies. While customary institutions may not be major barriers to tree planting, they may not lead to efficient allocation of land meaning that, for example, it may be difficult, though not impossible, for someone who has the means to invest in agriculture to acquire land in some areas.

Farmers generally demonstrated positive attitudes towards land titles as a proof of ownership of land. Their responses as to why they have not obtained titles to secure their land as has been stipulated by the 1974 *Land Ordinance* indicate that lengthy procedures, ignorance and other transaction cost-related factors are the major impediments rather than resistance to the law. These stumbling blocks are not specific to Cameroon but are common in sub-Saharan Africa. This means that the debate should not focus on the acceptability of land titles because farmers do have positive attitudes towards them, but rather on how African governments can reduce transaction costs involved in the process of obtaining land titles. Arguments put forward by some farmers in favour of land titles also imply that they are losing confidence in their traditional institutions as arbitrators of land conflict because it is rather common nowadays to encounter corrupt traditional authorities.

We found that farmers' positive attitudes towards land titles weakened when respondents were asked to choose between customary systems and land titles. Although a significant majority still opted for land titles, the significant drop in favour of customary systems indicates that some farmers still have trust in traditional institutions. Most of the farmers who preferred the customary system were from the savannah and thus support our hypothesis that farmers from areas that have gone through minimal cultural decay will prefer customary to

formal systems. Results also support another hypothesis i.e. that farmers who have a history of cases of land conflict were more likely to prefer land titles compared to the traditional system. Although population density did not have any significant direct effect on farmers' preferences for formal or customary systems as hypothesised, this study supports the evolutionary land rights theory in the sense that as time moves on and as customs get eroded by politics and modernity, more farmers will prefer tangible proofs of ownership.

A majority of the sampled farmers harvest the studied species from individual plots for which they claim private ownership whereas provenances from open access were low. Access rights to the studied species and other NTFP of high commercial value found on individual plots are restricted by customary tenure governing private ownership. This may be an incentive to tree planting on individual plots because then farmers' rights to the planted tree are secured. However, NTFP of low commercial value may be open access even on individual plots.

The general conclusion of this chapter is that while tenure security may be an important issue to address tree planting, land availability may be more important in determining farmers' decisions to plant trees *ceteris paribus*. This is because the existing customary system does give them enough security to plant trees. However, as customary systems become diluted in modern times, coupled with increasing pressure on land, customary tenure needs to be protected by formal systems specifically land title. Therefore, further research on tenure security should focus more on measures to reduce transaction costs related to obtaining individual land titles. This study does not, however, put the legitimacy of customary systems to question but argues that simplified formalisation procedures would contribute protecting customary rights or in granting more secured ownership of land to farmers so that the argument whether they own or possess land may no longer have sense. Farmers' positive attitudes towards land titles is an indication that in the long run, formal institutions governing land are going to correct inefficiencies in customary systems.



## **Chapter**

# **7 A Tale of Transaction Costs and Forest Law Compliance: Trade Permits for Non-Timber Forests Products in Cameroon**

### **Abstract**

There are growing concerns about illegal activities in the forestry sector and some work is in progress to understand the causes and consequences of non compliance to forestry laws. However, most research on illegal forests activities is about illegal timber harvesting with little efforts on other activities like Non Timber Forests Products (NTFP). In Cameroon, commercial exploitation of most NTFP is regulated by a permit system. However a majority of traders who sell these products do not have the necessary permits. The objective of this paper is to assess and use Transactions Costs economics (TCs) to explain why traders in Cameroon do not comply with regulations on permits. Results show that the process to obtain permits may require more than 26000 USD and the applicant may monitor application files for more than 4 years with NGO support in order to be successful. Analyses of traders' perceptions illustrate that, the major sources of high TCs in the forests sector are perceived complex administrative procedures and information asymmetry on procedures and requirements to obtain permits. The study concludes that it is the impracticality to abide to high TCs rather than the inclination to disobey the law that pushes traders to operate without permits.

**Keywords:** Forest law, Trade Permits, Illegal forest activities, NTFP Traders, Transactions costs, Cameroon

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## 7.1 Introduction

There are growing concerns about illegal activities in the forestry sector and some work is in progress to understand the causes and consequences of non compliance to forest laws. However most research on illegal forests activities are about illegal timber harvesting (Cerutti and Tacconi 2006; Assembe Mvondo 2009) with little attention for such alternatives like Non Timber Forests Products (NTFP). As an illustration, the latter group of products have been completely neglected in the Forest Law Enforcement, Governance and Trade (FLEGT) process. This can be considered as an oversight taking into consideration the economic importance of NTFP in local, regional and international trade (Tieguhong *et al.* 2010).

Illegal forest activities are defined to include a wide range of activities among which the occupation of forest land, illegal harvesting, transportation and trading of forest products (Contreras-Hermosilla 2002; Tacconi *et al.* 2003; Brown *et al.* 2008). Complying with laws and regulations governing these activities is therefore crucial in achieving good governance in the forestry sector. The concept of compliance is defined as all behaviours by actors to respect prescribed rules governing specific activities (Young 1979). While the extent and impacts of non compliance have been well covered in the literature, factors and motivations that affect individual actors to comply with forest laws are generally not well known (Hansen 2011; Ramcilovic-Suominen and Epstein 2012). In the World Forestry Congress (WFC) in 2009, good governance and effective institutions at all levels of the forestry sector were particularly recommended as important drivers to be considered in order to achieve sustainable forests management (Serrano 2010). It is thus regrettable that NTFP are often neglected when illegal forestry activities are discussed. The objective of this chapter is to contribute in filling this gap in the literature by using the failing permit system for NTFP traders in Cameroon as a case study.

As discussed in chapter two, the NTFP sector in Cameroon consists of numerous actors, the most prominent among which are producers or collectors, traders and the Government of Cameroon (GOC). One of the problems producers or collectors and traders face is the necessity to have formal recognition to legally trade in NTFP. This requirement is defined in the *1994 Forestry Law* (Government of Cameroon 1994). The *1994 Forestry Law* was conceived as an instrument to guide sustainable forest management in Cameroon but has

received criticisms for various reasons (see Chapter four). One concern is that it limits farmers' rights to most NTFP to mere usufruct rights (exploitation for personal use only) as it subjects commercial exploitation (especially by traders) to permits (Ngwasiri *et al.* 2002; FAO *et al.* 2010; Laird *et al.* 2010b).

Permits are either related to “special forestry products” or to other high value NTFP not included in the lists of “special forest products”. The Government of Cameroon (GOC) does not define special forests products per se but lists in section 9 (2) of the *1994 Forestry Law* a number of products which are considered “special forest products”. These include ivory, ebony, and wild and medicinal plant species. It is specified that they constitute products of special interest to the state. The law further states that the list of forest products shall be fixed by the competent Ministry ‘as at when necessary’.

NTFP marketed in Cameroon are gathered from the wild or from existing farming systems. The *1994 Forestry Law* governing the permit system does not distinguish between these origins (Betti 2007b; Foundjem-Tita *et al.* 2012b) and controversies exists in the scientific literature whether a NTFP is a NTFP when it is harvested from farmers' fields (Belcher 2003); and whether NTFP harvested from farmers' fields need to be subjected to the same permit systems as products gathered from the wild. The end result is also that the list of products regulated by the permit system is not known. The common practice is that most indigenous tree species and wild leafy vegetables are subjected to the forestry regulation irrespective of their source (Betti 2007b; Awono *et al.* 2012; Foundjem-Tita *et al.* 2012b).

Based on the proposition of Coase (1960) that a legal system may affect TCs, some scholars argue that the costs to obtain permits together with other policy instruments such as licenses to start a business form entry or trade barriers, because they are expensive for poorer agents and they have a restrictive effect on trade (Bourke 1988; Shleifer and Vishny 1993; Scherr *et al.* 2004). The costs of obtaining formal recognition or the so-called entry costs into the NTFP business which are considered in this study are different from the traditional barriers of entry which are often referred to in economics such as monopoly and high capital requirements (Mujawamariya 2012). Here, the focus is on compliance with Government-imposed procedures.

The procedures to obtain an official status in Cameroon to trade in NTFP is described as long and complicated. It is depicted to take many years and may require extensive lobbying or networking (Laird *et al.* 2010b) for one to be successful. The sequence of documents required are the following: an approval, an exploitation permit (special or mutual), payment of a forestry tax and a way bill. Although the formalisation process requires a sequence of documents, the entire process is colloquially referred to as “permits”. The term “permits” will therefore be used throughout this chapter to refer to the above four documents. Where reference is made to a particular document, it will be specified. The series of documents required to obtain legal status to trade in NTFP have been specifically described by Betti (2007b), Djeukam (2007) and Ngwasiri *et al* (2002) and will only be sparingly depicted here.

An approval according to section 41 of the 1994 *Forestry Law* gives the holder the right to exploit any forestry resource. As specified in the latter law, an approval gives the holder access to the forest profession. It is only after obtaining such an approval that the holder can request for an exploitation permit. The latter could be a *special permit* for “special forest products” or *permit based on mutual agreement* for other forests products not classified as special. The difference between special permits and permits based on mutual agreement is that the former is issued by an inter-ministerial committee while the latter is issued by the ministry in charge of forests. A way bill is intended to monitor and trace the quantity of a product carried at any specific time by a trader authorised to sell a NTFP.

Different schools exist for explaining compliance with the law. These may focus on economics (Becker 1968), social factors (Cialdini and Trost 1998) and/or institutions (de Soto 1989; Ostrom 1990). There are continuous calls that concepts and models of the NIE schools need to be broadened to address public policies (McCann *et al.* 2005). As discussed in chapter two, the NIE with a focus on TCs has been adopted as the broader theoretical lens to analyse the reasons why traders do not comply with the law governing trade in NTFP in Cameroon.

TC theory as a branch of the NIE has been used to analyse entry costs or start-up costs of a business in other developed and developing countries. One of the most cited is the work of de Soto (1989) who measured the cost of doing formal business in Peru. He studied the costs of meeting formal procedures and starting a new business as opposed to costs of doing business informally. Zylbersztajn *et al.* (2007) while studying the start-up costs of doing business by small Brazilian firms challenged the methodology used by the World Bank in its studies on

doing business around the world (World Bank 2006). Instead, they adopted the method developed by the Ronald Coase Institute that uses real instead of hypothetical costs. The method makes provision to gather information from those who have succeeded in registering and also includes the perceived costs of registering by those who have been dissuaded from actually registering as a cause of these costs.

Even though the World Bank reports on the climate of starting a business and addresses these cumbersome procedures in many countries, Arrow, (1969) argues that it is important to quantify the specific TCs in different contexts and under different systems of resource allocation. In other words, it is important to identify and analyse TCs in different types of business sectors. By so doing, it is possible to improve efficiency in each particular sector. This means that it is important to analyse TCs in the NTFP sector in order to bring out specificities that are needed to design policies or improve efficiency in the value chain in particular and in the forest sector in general. The issue here is that if obtaining permits requires years and has high costs, then this must have an impact on compliance level and consequently on the performance of actors in the value chain as they have to sacrifice time and money. The concern here is not that such costs exist but rather that if they are too high compared to the capital of NTFP traders, it would deter them from complying with the law (Richards *et al.* 2003; Wells *et al.* 2007; Blaser 2010).

If actors in the field and particularly policy makers are aware of these costs, their sources and the effect on the overall economy and the natural resource base, then they can develop measures to consolidate them if they are low, or else design new options to mitigate their negative effects if they are high.

The specific questions that will be answered in this chapter are: why do traders prefer illegally rented permits instead of applying for own permits? Is their decision to operate illegally related to perceived high transaction costs governing the demand and supply of permits? If yes what are the sources of these high transaction costs? In addition, the study intends to answer whether the current institutional arrangements in the issuing of permits generate incidences of corruption or rent seeking? Are there winners and losers in the current configuration? If yes who are they?

The rest of the chapter is organised as follows: first, key actors in the demand and supply of permits are described; in addition an analytical framework based on the NIE is developed to help in explaining the occurrence and sources of TCs involved in obtaining permits that regulate selling of NTFP in Cameroon. Furthermore, a cost-benefit model including TCs is developed to explain the traders' trade-offs between formal and informal business models. At the empirical level, an attempt was made to calculate the costs of obtaining permits as a proxy for TCs. The perception of traders who had not succeeded in getting permits was elicited in order to assess their awareness of the procedures and perceived TCs involved in the process. Finally, the literature on the effect of the presence of the informal sector on an economy was used to explain the implications of high TCs on different actors in the NTFP value chain in Cameroon.

## **7.2 Key actors in the demand and supply of permits in Cameroon**

Before specifying the cost-benefit model used in analysing winners and losers in the permit system, it is important to describe the stakeholders that are involved in the demand, supply and control of permits in Cameroon (Figure 7.1). The thickness of the arrows in figure 7.1 indicates the intensity of the relationship.

The GOC is the main actor that issues (through an inter-ministerial committee) and controls permits (through forest and police officers). The arrows between Government officials who issue permits and other actors in the chain indicate that anybody can ask for a permit to sell NTFP. The police/‘gendarme’ and forestry guards are supposed to enforce the law by verifying that traders who sell NTFP have the necessary documents. The bold arrows on the diagram indicate where controls are intensified whereas the dotted arrows indicate little or no control.

The next group of actors are traders who are by law supposed to obtain permits to sell NTFP. In the group of traders, there exists a category we here refer to as ‘Economic Operators’ (EO). EOs may not be interested in selling NTFP but handle other forestry resources like timber. This is because an approval, which is the first document to be obtained to have access to the forestry profession, applies to both NTFP and timber. EOs may also be businessmen who, because of their influence, have succeeded to obtain the necessary documents (Kaimowitz

2003; Betti 2007b; Laird *et al.* 2010a). These EOs, rent out permits in the form of waybills to NTFP traders who have not succeeded to obtain one. However, the law clearly states that an approval should neither be rented nor leased. This means that their activities is illegal (Betti 2007b; Awono *et al.* 2012). The thick arrows linking EO and the mobile traders indicate high demand and supply of permits between EO and traders.

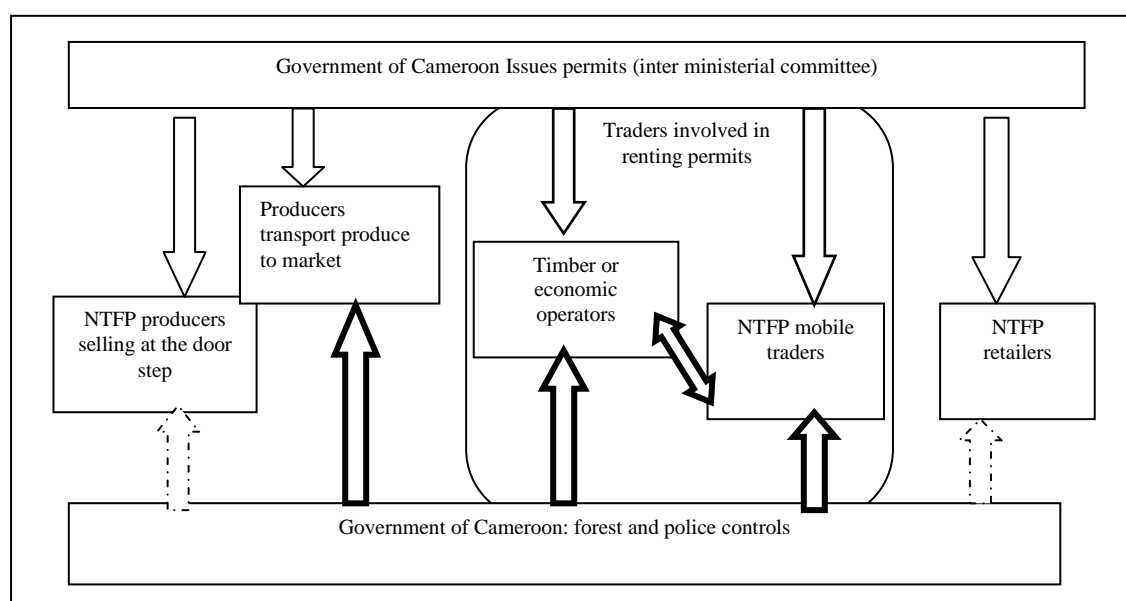


Figure 7.1: Actors involved in the demand, supply and control of permits in Cameroon  
Source: author

The last group of actors who may be involved in the permit system are producers or collectors. They may either sell at the door step (which is the usual practice) or transport their produce to village or urban markets. The broken arrows from permit controllers to producers indicate that when they sell at the door step they are not subjected to control. However, if they decide to transport their produce to markets then they may be subjected to controls.

### 7.3 Analytical framework

As mentioned above, the NIE framework is used to specify TCs involved in demand, supply and control of permits. Coase (1937) was the first to introduce the concept of TCs in his seminal article 'The nature of the firm' in which he stressed the fact that market activities are not costless but create costs of using the price mechanism. The analysis of TCs evolved to a branch in NIE driven by the work of Williamson and colleagues (Williamson 1975, 1979,

1985, 2000a, 2004). The NIE framework holds that the costs of transacting - determined by institutions and institutional arrangements between transacting parties - are the underlying determinants of economic performance (North 1990; Kherallah and Kirsten 2001).

When using the TC framework, a transaction as opposed to the good being transacted is often considered as the basic unit of analysis (Williamson 2000b; Hobbs and Young 2001). Also, it is often important to define both the transaction and transaction costs being studied because numerous definitions and inconsistencies exist among different definitions (Benham and Benham 2001; McCann *et al.* 2005) and this may confuse the reader as to the objectives of a particular study.

To Williamson (1996), a transaction occurs when a good or a service is transferred and to Ménard (2000) a transaction occurs when rights are transferred. Both Ménard's and Williamson's definitions of a transaction suit this study because the process of obtaining permits to sell NTFP involves the transfer of rights from the government department that has the responsibility to issue the permit, to a trader who receives it. Following the definition of a transaction, TCs can logically be defined as the costs involved in the transfer and protection of rights (Barzel 1997; Zylbersztajn *et al.* 2007). But in Coase's (1937) original thinking, TCs are costs incurred in the open market. They constitute the cost of finding a buyer (information costs), to negotiate, bargain and reach for a deal, sign a contract (bargaining costs), and follow up implementation to make sure the terms of the contract are implemented as planned (monitoring costs) (Hobbs 1995; Hobbs and Young 2001; Wang 2003).

Gordon (1994) defines TCs as expenditures incurred in participating in a market or in implementing a government policy. With regards to the latter, TCs can be distinguished based upon the actor who bears the costs (Stavins 1995). For example, Mettepenningen *et al.* (2011) distinguish between public and private TCs in implementing government policies related to agri-environmental schemes. When TCs are borne by government they are termed public TCs. They are termed private TCs when borne by an individual. This study focuses on the latter typology of TCs. In other words, we are not concerned about the TCs involved in the Government systems such as cost borne by the government to enforce regulations. Therefore, TCs in this study can be thought of as the costs borne by traders to obtain information necessary to know about and comply with government regulations to operate in the formal NTFP sector in Cameroon. They also include the cost to overcome barriers imposed by



cumbersome government procedures, resources spent in monitoring and waiting for permits, in bribing officials and in cutting through red tapes.

According to Buckley and Chapman (1997) ‘all transaction costs are in an important sense perceptual matters’. This means it is the perceived importance of TCs by those expected to obtain permits that may either encourage or discourage them to apply for a permit rather than the real costs. In other words, if institutions and procedures are such that traders can seek the necessary information and pay the required fees then they will try to obtain a permit. On the other hand, when institutions and procedures are costly in terms of time and money resources, this will provide lower enticement for them in general and for the small-scale traders in particular to comply (Blaser 2010). Willingness to comply will be especially low if traders perceive that complying will yield lower benefits whereas by not complying they will reduce costs without giving up their business.

## **7.4 Methodology and analyses**

### **7.4.1 Data collection**

Data for this study were collected from 70 traders specialised in selling four different NTFP. These include *Cola* spp, *Ricinodendron heudelotii*, *Gnetum* spp and *Irvingia gabonensis*. These four species are among the most widely traded NTFP in Cameroon (Ndoye *et al.* 1998; Ingram and Schure 2010). Traders handling them often complain about frequent harassment by police and forestry officials requesting permits. Data are limited to traders because most producers sell at the door step and are thus safe from police and forestry control. In this regard, producers may not be aware of the requirements to obtain permits and were thus excluded from the survey. Data were collected over a period of six weeks (March – mid April 2012). The sampled traders are specifically those who transport the studied species between supply villages and the studied markets. Retailers are therefore also excluded. For the respective products, the studied markets were either major local assembly or urban markets (Ebolowa, Bafoussam, Ashong, Yaounde, Douala, and Bamenda) or export markets (Ideanau and Bota waft). Each of the markets was visited at least two times within a week in succession i.e one market after the other. This was done in order to increase the chance of meeting a good number of different traders. Similarly, the method was also chosen to capture as much

variability as possible particularly as this category of traders is very mobile between supply villages (to secure purchases) and the studied markets. This makes estimation of the sampled population difficult.

The data collection tool used was a questionnaire adopted from that developed by the Ronald Coase institute on the cost of exchange in registering a business (Benham *et al.* 2004). For this study, questions asked were related to: trader awareness and ownership of different official documents required to sell the selected species; perception of TCs involved in the process; assessment of factors that may affect variability in the perception of TCs among traders such as social capital (group membership), sex, political connection, ethnicity and others; if and by how much they bribe their way through police and forestry officials in case they do not obtain permits, etc.

It was difficult to talk to a sufficient number of traders who had already obtained permits to measure TCs involved in the process. This was because; the few economic operators who rent out permits were either too busy to cooperate or refused to take part in the interview. However, one community-based common initiative group that had extended its activities to selling NTFP and had recorded most of the cost they had incurred in the process, provided data on the actual cost they incurred in obtaining an approval. For reasons of anonymity requested by the group, no detailed information can be given about them.

Three members of the community-based organisation who took part in compiling and following up the file for an approval assisted in filling a question guide that was adapted from Benham *et al.* (2004). This data was crosschecked with that of a GIZ project reported by Nguenang *et al* (undated) that recorded similar information for a Common Initiative Group (CIG) in the East of Cameroon. The group in the east is also being assisted by the German Development cooperation (GIZ) to obtain the NTFP permit. The GIZ method consisted of recording every step and costs (time and money) that they incurred in the process. Data from these two sources were used as a reflection of the actual transaction costs required to formally trade in NTFP in Cameroon. Even though the chapter illustrates its arguments on estimated TCs based on these two examples, the authors agree that the sample is small and the small size is related to the already mentioned difficulty related to the non willingness to participate by those who had succeeded to go through the process. However, information from the case study groups have been included to demonstrate that the points raised have an empirical basis and are not simply speculations.

Descriptive statistics were used to analyse the proportion of traders who own permits and who knew the procedures involved, and also to study traders' perceptions of the sources of TCs. Analysis of variance (ANOVA) was used to compare data regarding the four different NTFP species. Cost-benefit analysis was used to compute trade-offs made by traders by not trying to obtain permits and what the Cameroon economy loses as a result of traders not complying.

#### **7.4.2 Specification of the cost-benefit model to analyse winners and losers in the permit system**

The analytical framework highlighted perceived transaction costs as a major factor that discourages traders from going for permits. That is, if perceived TCs involved are high, traders will not go for a permit. Furthermore, if the traders believe that they may bribe their way through without a permit then they will certainly not go for it and will pay a bribe. The point is that the decision to go for a permit depends on traders' perceptions of the costs (transaction costs) plus the bribe put against the benefits of having a permit. The cost benefit model is specified below.

##### **Variables in the model**

*The Forestry Regeneration Tax (Rtx)* – this tax is paid upfront once a trader has been issued an approval and a permit to sell a given NTFP. The Rtx is meant for regenerating the forestry resource that is exploited. The official amount requested by the government is 10FCFA/kg irrespective of the species

*Expected Government Revenue from regeneration tax (EGR)* - amount of money the GOC is expected to make from the regeneration tax. Although the GOC is expected to generate income from other activities like stamps that applicants are supposed to buy and use on papers that they need to file for the requested documents, for simplicity reasons, only the regeneration tax was used. This may actually underestimate the financial losses from the forestry sector to the state if no permit were requested.

*Quantity (kg) of produce handled in 2011 by trader  $i$  ( $Q_i$ )*

*Cost to rent out a permit (waybill) for one kg of produce (Spx)* = imposed by an economic operator to traders who do not have permits

*Perceived transaction costs (TCs)*: Perceived cost of obtaining the required information, compiling and following up files to obtain the necessary permit.

Based on the above variables, for a given trader  $i$ , where  $i = 1 \rightarrow n$ , dealing with species  $j$  where  $j = 1 \rightarrow m$ , total quantity of NTFP handled by trader  $i$  is given by equation 1.

$$Q_i = \sum_{j=1}^m Q_{ij} \dots \dots \dots eqn 1.$$

Since it is assumed that all traders pay a regeneration tax  $R_{tx}$  irrespective of the species, payment to government or expected government revenue from all  $n$  traders is denoted by EGR and it is given by equation 2.

$$EGR = \sum_{i=1}^n \sum_{j=1}^m Q_{ij} \times R_{tx} \dots \dots \dots eqn 2.$$

If the  $i^{th}$  trader dealing in species  $j$  decides not to go for an official permit and instead rent one informally from an EO, s/he spends an amount REO (Rents to economic operators) as shown in equation 3.

$$Q_{ij} \times Spx_j = REO_i \dots \dots \dots eqn 3.$$

Total amount spent by all the  $n$  traders in renting permits from EOs is given by equation 4. This equation also represents the total revenue received by economic operators (TREO) in renting out permits to all the  $n$  traders.

$$TREO = \sum_{i=1}^n \sum_{j=1}^m Q_{ij} \times Spx_j \dots \dots \dots eqn 4.$$

By renting out permits, traders incur an additional cost of TLp. This is so because; if they were to pay directly to the Government they will only pay EGR (see equation 5).

$$TL_p = TREO - EGR \dots \dots \dots eqn 5.$$

However the traders also spend some money to bribe their way through the police and forestry officers. This happens despite of the fact that the trader has presented the rented permit (waybill) because the police and forestry officers know it is illegal by law to rent permits. Secondly traders often carry more than what is declared on rented waybills in order to compensate for cost of renting permits and paying bribes. This means that they may either be caught for one penalty or another. It is worth noting that the decision to rent a permit is a psychological one as the traders assume that they may avoid being punished by brandishing a rented permit. In theory the traders may take one of the following three decisions:

- i- Trader gets a permit and bears high transaction costs
- ii- Trader rents a permit and bears the cost of rents + bribe
- iii- Trader circulates without any permit and pays a bribe

Yet, because option three is a rare occurrence it was not considered in the analysis as all the traders endeavour to have any form of document to brandish at the check points. In addition we could not identify traders who have succeeded to obtain the permits and who are actively involved in the NTFP trade. For this reason option one is also overlooked in our analysis.

Let Bq = bribe paid per kg of product to the forest and police officers. The total amount received by agents from all the traders (TRpf) is given by equation 6.

$$TR_{pf} = \sum_{i=1}^n \sum_{j=1}^m Q_i \times B_q \dots \dots \dots eqn 6$$

This means that traders who rent a permit and pay bribes to the police and forestry incur additional costs (TAC) due to the price of renting permits and informal taxes as shown by equation 7.

$$TAC = TR_{pf} + TL_P = TREO + TR_{pf} - EGR \dots \dots \dots \text{eqn 7.}$$

If the traders were to bear the TCs involved in obtaining permit and assuming that they got the permit they would not have paid the bribe and only spent the amount shown in equation 8.

$$TCs + \sum_{i=1}^n \sum_{j=1}^m Q_{ij} \times R_{tx} \dots \dots \dots \text{eqn 8.}$$

If the traders decide to operate without a permit it means that they made their calculations and observed that TCs plus all official costs of permits were greater than the cost incurred in renting permits plus bribe paid to the forestry and police (see equation 9).

That is

$$TCs + EGR > TAC = TR_{pf} + TL_P \rightarrow TCs > TR_{pf} + TL_P - EGR \dots \dots \dots \text{eqn 9.}$$

In case equation 9 is true, i.e. perceived TCs are greater than the total costs incurred by traders to rent permits and to pay bribes to police and forestry officers minus the regeneration tax, then, it may explain why traders prefer to operate illegally by renting permits instead of going for own permits.

Based on data collected from 70 traders dealing with four different NTFP, TR<sub>pf</sub> and TL<sub>p</sub> values were calculated.

Based on data collected from 70 traders dealing with four different NTFP, TR<sub>pf</sub> and TL<sub>p</sub> values were calculated.

## 7.5 Results and discussions

### 7.5.1 Description of traders and their activities

The 70 traders interviewed were either handling at least one of the four respective species as a principal (82%) or a secondary (18%) source of revenue. Of these, 46 % were specialised in selling one specific NTFP, 43% handled either two or three species, while the rest handled four or five different products. Besides the four above-mentioned species studied, traders also traded other NTFP or other agricultural products among which *Pentaclethra macrophylla*, *Garcinia kola* and other spices of NTFP origin.

All traders interviewed were operating their own businesses. Eighty-seven percent of them were wholesalers. This means they buy and sell in bulk. Seven percent perform both wholesale and export activities, while six percent carry out both wholesale and retail activities. In the year 2011, the 70 traders interviewed sold a total of 2,066 tons of the four selected NTFP worth 1.7 billion FCFA (1USD app 500 FCFA). One-way ANOVA revealed significant differences between average individual quantities handled per trader ( $F(3, 65) = 15.58, p = 0.000$ ). Post-hoc comparison using Dunnett T3 test shows that individual mean quantities handled by *Gnetum* spp traders were significantly higher compared to the other three species. The same test also revealed that mean quantities (Table 7.1) handled by *I. gabonensis* traders were significantly higher compared to those handling *R. heudelotii* and *Cola* spp. This can be explained by the fact that *I. gabonensis* and *Gnetum* spp. have huge regional export markets in Nigeria and Gabon while the first two are mostly consumed in Cameroon.

Table 7.1: Quantities and value of NTFP traded by 70 traders in 2011 for four selected species

Species	Total quantity (tons )	Mean quantity in kg /trader	Total Value in millions FCFA	Mean value in million FCFA/trader	Average price/kg in FCFA	N
<i>Gnetum</i> spp	1120.80	53371	784.56	37.36	700	21
<i>Irvingia gabonensis</i>	739.92	33632	853.76	38.81	1154	22
<i>Cola</i> spp	158.76	8820	37.80	2.10	238	18
<i>Ricinodendron heudelotii</i>	47.07	5230	54.92	6.10	1167	9
Total	2 066		1 731	24.73		70

## 7.5.2 Traders' awareness and possession of different types of documents needed to sell NTFP

More than 94% of the respondents were aware of the legislation which requires them to have permits to sell the selected species. It was found that most of them became aware of this legislation as a result of requests by police and forestry officials during controls, which suggest weaknesses on the part of Government in communicating rules.

Traders were generally confused about the specific documents as prescribed by the law. For example, at least 30% reported having used an approval, 41% an exploitation permit and 66 % a way bill (Figure 7.2). Other than the waybill, for which 16% of the traders declared that it was personal, all other forms of legal documents were rented, usually on an annual basis. Traders' declarations of personal possession of waybills may be related to misinterpretation or confusion between waybills and certificates of origin as obtaining a waybill is the last step in a sequence of three as earlier described. In reality, some traders especially kolanuts traders in order to minimise risk of seizure for lack of permits, contact divisional forestry officers (local level forestry administrators) to get a so-called certificate of origin. In return they pay 10 FCFA/kg. This amount in reality represents the regeneration tax.



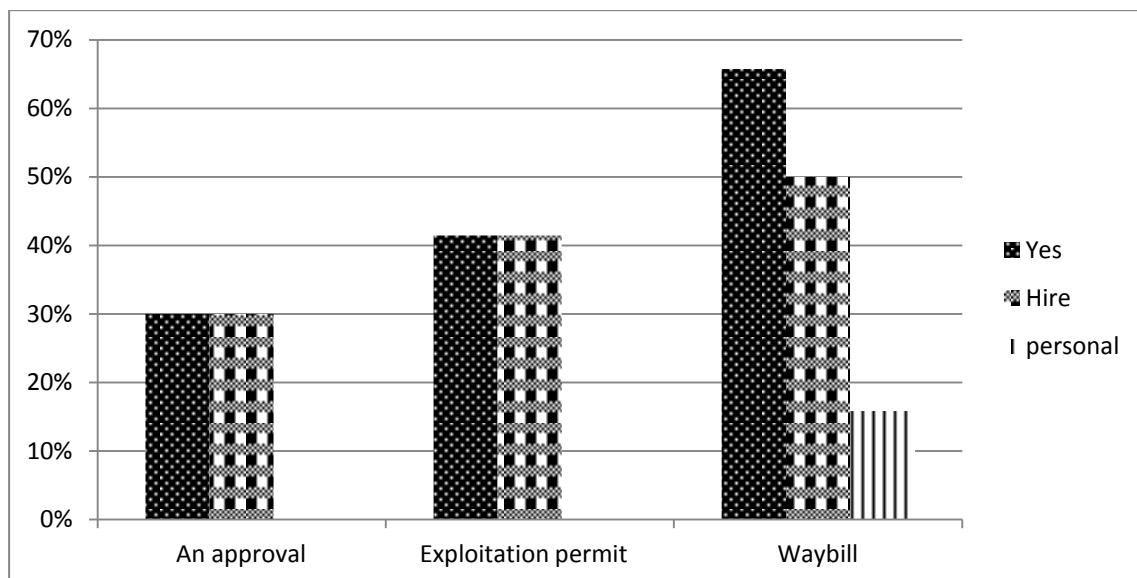


Figure 7.2: Indicating if trader had use and sources of different types of formal documents

### 7.5.3 Informal taxes

Ninety-four percent of the respondents declared having paid some money to either the forestry department or the police during their last transaction and narrated that it is a common practice in their daily transactions. Ninety-five percent of them declared they had not received any receipt, indicating that payments were unofficial. In the few cases where some official documents were issued to justify payments, (for example to kolanuts traders) they did not bear the amount paid. Fifty-eight percent of the interviewees reported that on most occasions they pay to forestry officials while the remaining 42% paid to a combination of ‘gendarmes’, police and forestry officials. Average informal taxes paid varied between 15 FCFA per kg for kolanuts and 62 FCFA per g for *Gnetum* spp (Table 7.2).

Due to high variability, the data in this case were transformed into a log-scale in order to meet the conditions of homogeneity of variances for ANOVA. One way ANOVA revealed significant difference between the four species ( $F(3, 62) = 10.61$   $p = 0.00$ ). Post-hoc comparison using Dunnett T3 test showed that mean informal taxes paid by kolanuts traders were significantly lower compared to those paid for the other three species. This may be explained by the fact that kolanuts in Cameroon are highly domesticated and are generally accepted to have been planted on and harvested from farms, whereas the other three species are mostly self-propagated and are thus generally considered to be forest products. However,

kolanuts were also found to have the lowest per kg price compared to the other products (see table 7.1). As will be shown later, there is only a weak correlation between the value of the product and the bribe/rents charged.

Table 7.2: Mean unofficial taxes paid (FCFA/kg) by traders per product

	N	Mean	Std Deviation
Gnetum	21	62.24	57.44
Irvingia	22	53.57	69.53
Kola	18	15.78	26.65
Njansang	9	58.50	55.86
Total	70	46.47	57.44

#### 7.5.4 Overall perception of the registration process and sources of transaction costs by traders

Although all seventy traders interviewed operate informally, i.e. they do not have permits of their own, 96% of them would like to obtain the required papers and operate in the formal sector, while 4% would prefer to remain in the informal sector. The latter group argued that, no matter whether you have the permit or not, you will still face problems from the police and the forestry officials, indicating low level of trust in Government institutions. The first group listed the most important reasons why they would like to obtain formal status (Table 7.3). Most frequent reasons were the need to avoid police and forestry control (47%) and the desire to operate legally (29%).

Table 7.3: Reasons why traders want to register officially

Reasons	Number of traders	
	Frequency	Percent
Avoid harassment from police and forestry officials	33	47
Operate legally	20	29
Reduce costs of buying way bills and paying bribe	10	14
Contribute to state revenue	5	7
Missing	2	3
<b>Total</b>	70	100

Traders gave a number of reasons to explain why they currently do not have a permit. Multiple responses were possible (Table 7.4). Prominent amongst them were the perceived nominal costs to obtain permits (33%), limited access to the required information (28%) and perceived complexity (23%).

Once it was found that traders had identified costs and information gaps as major setbacks to the registration process, the study attempted to estimate variability in the perceived amount as a proxy for misinformation. Thirty-seven percent of them were unable to give any figure to approximate the amount of money they would spend but acknowledged that they had learned from various sources amongst which friends, police and forest officers that it is ‘very expensive’. Those who attempted to estimate the amount gave figures in the wide range of 100,000 FCFA to 203 million FCFA. This large variation demonstrates the level of misinformation about the nominal amount required to obtain a formal status. In terms of duration needed to process and follow up files, it was believed that the mean average time was 1.8 years (+/- 1.14 years). As it would be discussed later, traders’ estimates of costs somehow reflect reality but they under-appreciated the time required.

Table 7.4: Reasons why traders prefer to operate in the informal sector

	Responses		Percent of cases (n = 70)
	n	Percent	
The process costs a lot of money	40	33	58
Limited access to information on registration procedures	34	28	49
The process is complex	28	23	41
The process is time-consuming	13	11	19
Respondent is new in the business	3	2	4
Whether you have official papers or not, you will need to bribe your way through	3	2	4
I think this species is not a forestry product and so we do not need permits	2	2	3
Total	123	100%	

An attempt was also made to identify the steps in the formalisation process that are considered as ‘complex’ by traders. In this case traders were asked to score the sequence of documents on a scale from 1 (very complicated) to 5 (very easy). Even though it was

mentioned in section 7.5.2 that traders were confused about the type of documents required to apply for permits, results show that obtaining an approval (first step) was rated as either very complicated or complicate by more than 70% of the respondent. This thus suggests that despite the above stated confusion, a majority of the traders are aware of the hurdles to get and approval. Obtaining a permit was considered as the second most complicated. The next section calculates the cost and time it took for a community-based farmer organisation to get the approval.

### **7.5.5 Estimated transaction costs borne by a local community-based farmer organisation to obtain an approval**

Information gathered from the community-based organisation revealed that they took an estimated 98 days and some 1.3 million FCFA to go through a ten-step procedure to compile the necessary documents to submit for an approval (Table 7.5). When the number of days are compared with some of the World Bank doing business indicators such as starting a business<sup>3</sup> it is seen that starting a business in the forestry sector in Cameroon may be 5 times as difficult at least for the case study group as in any other sector in the country which generally requires 19 days (World Bank 2011). About 40% of the amount (510,000 FCFA) spent to compile documents represented unofficial costs paid to Government officials.

After compiling the documents, the organisation spent more than 12 million FCFA to follow-up the files for more than 4 years (Table 7.6). The file was deposited in August 2000 whereas the approval was only obtained in October 2004. These figures can thus be considered as an estimate of the monitoring costs involved in going only through step one of the three that are needed to obtain a formal status to sell NTFP in Cameroon. When these figures are compared with traders' estimates, one can conclude that their perceptions of the nominal amount of money required are closed to existing practices in the delivering of permits. In actual fact, one of the documents required by the government to be issued an approval is a proof of financial capacity.

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<sup>3</sup> The World Bank starting a business indicator measures procedures (number) to legally start and operate a company; the timed required to complete each procedure (calendar days) and paid-in minimum capital (% of income per capita).

Table 7.5: Estimated time and costs to compile documents to gain access to an approval by a local community- based organisation in Cameroon

Activities		Amount paid (FCFA)				
		Number of days	Official amount paid to the sate	Fees paid to the facilitator /consultant	Unofficial amount paid to state employees	Total
1	Obtain a stamped application indicating individual or company name		175,000	200,000		375,000
2	Provide a curriculum vitae	1	1,500			1,500
3	Obtain a non-conviction certificate	3	5,000			5,000
4	Obtain a register number	30	65,000		200,000	265,000
5	Obtain a social insurance number	30	35,600			35,600
6	Obtain a tax certificate	30	15,000		35,000	50,000
7	Obtain a statement of tax situation		150,000		150,000	300,000
8	Obtain a receipt for the payment of processing fee		150,000		100,000	150,000
9	Obtain a bank guarantee	2	0		25,000	0
10	Obtain a certificate of forest competency	2	0		Free service	0
Total amount		98	597,100	200,000	510,000	1,307,100

In other words, this may be equivalent to a bank statement to indicate that a trader has a given amount of money to run his/her business. No threshold amount has been specified by the Government. However, narratives from authorities of the Ministry of Forestry reveal that applicants who show proofs of financial capacity worth between 100 and 200 million are easily issued an approval. The case study organisation reported that through the assistance of some international NGOs they were able to present a bank statement worth about 200 million FCFA.

Table 7.6: Estimated amount spent by a farmer organisation in following up files after submission for a certificate of approval

Time/costs in following up files	Number	units	Cost/Opportunity cost of time	Total FCFA
Opportunity cost of time spent in following up files = 4 times/year * 5 days a trip * 4 years *4 persons/ trip	320	days	5,000	1,600,000
Transportation costs per person for four persons including intra-urban transport	64	trips	20,000	1,280,000
Feeding allowance/day * 4 persons	320	days	20,000	6,400,000
Special trips spent by three traditional rulers to persuade government	/	/	/	350,000
Estimated amount of unofficial fees paid during the four years				2,500,000
Total				12,130,000

N/B The community-based organisation was made up of four different villages and each had to be represented in each trip

The figures presented by Nguegang *et al* (undated report to GIZ) with regards to the amount of money and number of days required to compile files were even 50% higher than that of the case study group. This can be explained by the fact that our case study group was supported by elites who had strategic positions in Government. This finding is supported by Laird *et al.* (2010b) who stated that connections are needed to go through the process. This also means that TCs involved in obtaining formal status may vary depending on individuals and groups.

### 7.5.6 Traders' perception of factors influencing transaction costs

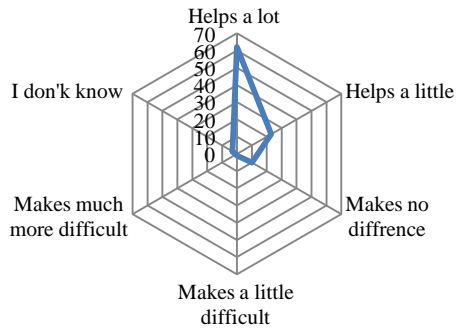
Traders were asked to assess which amongst predefined factors related to corruption, discrimination and networking often reported in literature to affect business (Fafchamps 2003; Amine and Staub 2009) would ease or complicate the process of obtaining permits. Results show that a majority of the respondents considered close political connection to either help a lot or to help a little (Figure 7.3). However, our case study group members said that close political connection played only a minor role in pushing their files through. Their opinion can be understood because despite the push they received from two former senior members of government and traditional authorities, the process still took more than four years. Other

facilitating factors, according to the traders are related to social capital such as membership in traders' association and NGO assistance. For example the case study group acknowledged that without support from an international NGO they wouldn't have raised the necessary amount of money to go through the process.

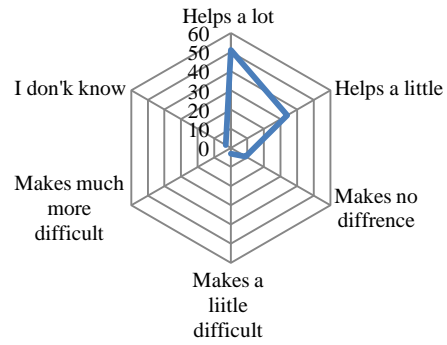
Factors that were perceived to negatively influence TCs are related to corruption, such as being a well known business. In line with Kaimowitz (2003) and Shleifer and Vishny (1993) and as will be discussed later, powerful businessmen in the forestry sector (economic operators in our case) use their contacts and financial ability to bribe their way and obtain permits which they later rent out to traders. Some traders narrated that they were convinced it is these economic operators who have used their influence to bribe government officials who now make it practically impossible for them to succeed in the process.

A majority of the traders considered that being a female would make no difference (about 55%) or would help only a little (about 25%). Conversely, a majority of the respondents gave an 'i don't know response' (about 55%) with regards to ethnicity or declared it makes no difference (20%) (Figure 7.3). The interpretation of these results is that for gender, more traders were certain it played no significant role while for ethnicity, a majority were unsure and only a minority belief there is a little favouritism related to ethnic origins. The latter results are in conformity with Fafchamps (2003) who found no empirical evidence between ethnicity and discrimination in business. Even though women entrepreneurs are often reported to be discriminated upon (Fafchamps 2003; Amine and Staub 2009; Coleman and Robb 2009), the results of this study suggest that according to traders' perceptions, the difficulties they face to obtain permits may not be related to discrimination or prejudices connected to ethnic origins or gender.

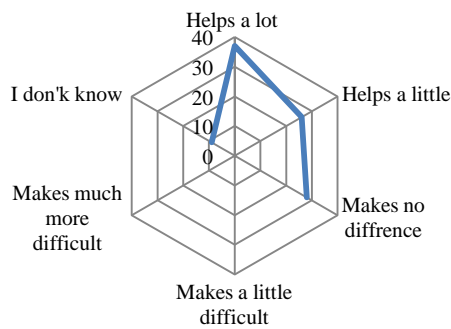
### Being a well known business man



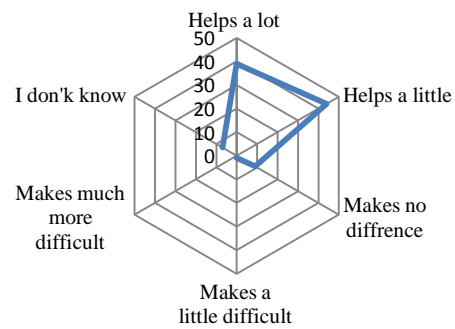
### Membership in traders association



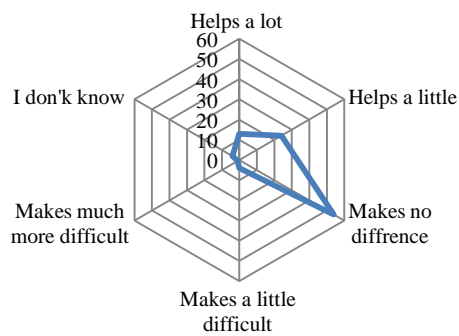
### Close political connection



### NGO assistance



### Being a female



### Ethnic languages

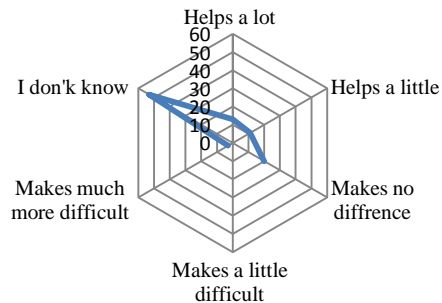


Figure 7.3: Traders perception of factors that may either ease or complicate the permit process



### 7.5.7 Cost benefit analysis of the impact of transaction costs on the performance of the NTFP value chain in Cameroon

It is worth recalling that the analyses that follow are based on the 2011 sales of 70 NTFP traders interviewed in 2012 and also on the equations in section 4.2. Based on the latter equations, EGR for the 2066 tons, of NTFP sold by the 70 traders is estimated at 20.6 million FCFA (equation 2). The 70 traders spent a total of 212.5 million FCFA in 2011 on renting permits and on informal taxes paid to police and forestry officers. The highest share of this amount (54%) went to forest and police officers while economic operators who rent out permits received 37%. Since almost all the traders rent permits from EO as reported in section 4.2, we assume at this stage that these EO paid regeneration taxes to the state. Based on this assumption, the GOC is supposed to have received the smallest fraction (9%) of the 212.5 million. With reference to equation 9, the perceived transaction costs for the 70 traders is greater than 193 million FCFA which represent the amount of money traders paid to the police and forestry as bribe less the EGR. Other analysis shows that the EGR represented just 1.2% of the annual turnover of the traders (see section 4.1) while bribe plus rents represented a higher proportion of the latter (11%). When the perceived TCs are computed per trader it amounts to an average of about 2.7 million FCFA per year (table 7).

A one way ANOVA revealed significant differences between species, ( $F(3, 66) = 9.47, P = 0.000$ ). Post-hoc comparison using the Dunette T3 test revealed that the mean amount spent on unofficial taxes by traders dealing in *Gnetum* spp and *Irvingia gabonensis* was significantly higher than that spent by traders dealing in *Cola* spp and *Ricinodendron heudelotii*. For all the products unofficial taxes per kg of species were comparatively higher than the fixed amount of 10 FCFA taxed by the GOC as regeneration tax (Figure 7.5). This is in conformity with Shleifer and Vishny (1993) who argue that bribery and corruption is much more costly than taxation and that ‘the secrecy’ of the unofficial taxes (bribes) makes bribes more distortionary to the economy than taxes. This is because these bribes and rents are not accounted for by these agents (policy, forestry and EO) and therefore represent the monetary value of the studied products that are not captured in national statistics.

Table 7.7: Mean annual unofficial taxes and rents per trader and per species

	N	Mean amount	
		FCFA/trader	std. deviation
<i>Gnetum</i> spp	21	5,456,161	5,343,061
<i>Irvingia gabonensis</i>	22	3,147,018	2,693,183
<i>Cola</i> spp	18	274,913	278,321
<i>Riciodendron heudelotii</i>	9	515,155	370,543
Total	70	2,762,837	3,878,900

It is logical to assume that unofficial rates charged by economic operators, police and forestry are in relation to the market value of the products. Although there was a significant positive correlation between per kg price of the studied species and the value of the bribe and rents ( $r(70) = 0.253 = P(0.04)$ ) it was rather weak (Figure 7.4). This suggests that other reasons may be more explanatory. One possible explanation may be that, for *I. gabonensis* and *Gnetum* spp, export markets to neighbouring Nigeria and Gabon are better developed while the other two only have limited export markets.

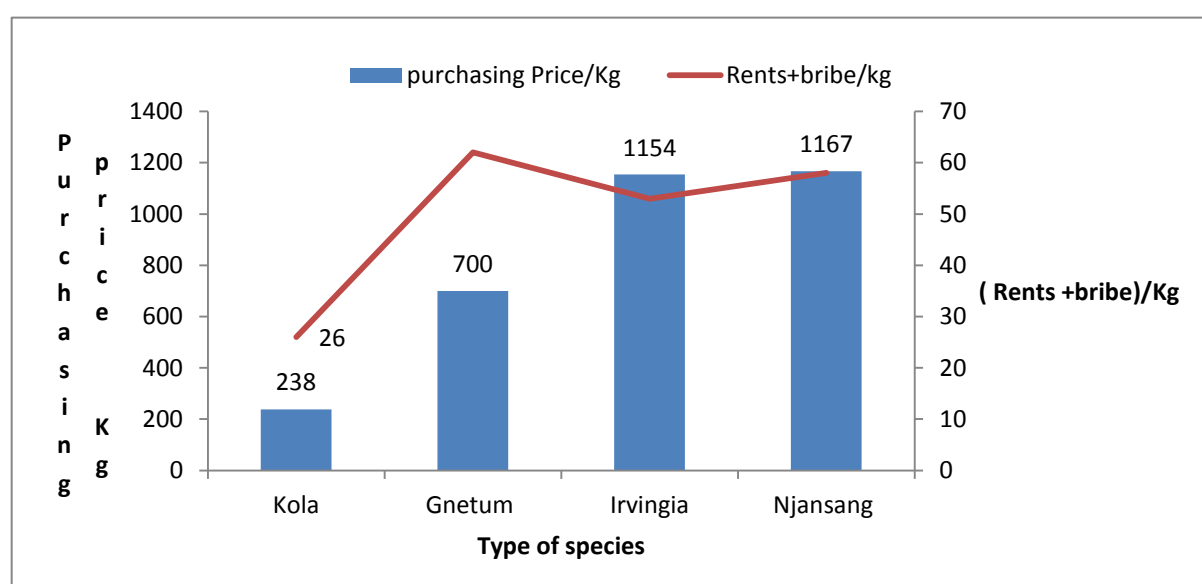


Figure 7.4: Relationship between buying price (FCFA) and unofficial taxes (rents + bribe)

As was elucidated in the model specification section, if traders prefer to rent permits and to bribe their way, it is because they believe that the amounts they spent on these illegal activities are lower than the perceived TCs involved in obtaining legal permits (equation 9). As an illustration, if a trader decides to apply for his or her own permit as an individual, s/he

will spend at least the same amount to compile files as the case study group because the documents are the same for a group or an individual (Government of Cameroon 1994, 1995). However as earlier mentioned, these costs may vary between groups depending on whether the group receives any form of assistance from an NGO. This means that based on the expenditures of the case study group, a trader would spend a minimum of 98 days and 1.3 million FCFA to compile the necessary documents; or a minimum of 2.5 million and 191 days based on the GIZ findings reported by Nguengang et al (undated). These costs do not include the opportunity costs of their time for the days used to compile the files nor does it include the amount of money they would use to monitor the files; it neither does not include the cost of a trader loosing his/her clientele while monitoring files. These arguments thus provide enough reasons to conclude that individual traders perceive TCs to apply for a permit to be greater than the above 2.7 million FCFA which they spend on bribe and rents and may thus justify their decisions to rent permits and pay bribes.

One would wonder why traders could not associate in groups to obtain an official status just as the case of the study group. This may be because most NGOs who assist farmers perceive traders as businessmen and do not consider that they may have such problems or that by assisting traders they are indirectly assisting poor farmers. Moreover, NGOs neglect to assist traders may be related to high public transactions cost of organising traders into a union taking into consideration their geographical spread and high mobility.

## **7.6 Conclusions**

This study assessed traders' awareness of procedures and perception of TCs involved in the process to apply for permits to sell NTFP in Cameroon. Moreover, the study estimated the TCs borne by a community based organisation to compile and monitor the documents required to obtain NTFP permits. The results of the study are used to explain why most NTFP traders in Cameroon do not comply with the law on permits.

Results show that a majority of traders were aware of the obligation to obtain a permit before selling the selected NTFP. Nonetheless, because of high TCs, none of the 70 traders had succeeded to obtain an approval, which is the first step in the formalisation process. According to the perception of traders, high nominal amount; limited access to information,

and the complicatedness of the process are the three most important reasons (and sources of transaction costs) why they prefer to operate without permits. It is worth mentioning that these relatively small scale NTFP trader businesses have to file the same documents as multinational timber companies with large capital resources. This therefore suggests the relevance for GOC to develop new regulations that will imply permit systems that are more accessible and tailored to NTFP traders.

Results of the study also suggest that the traders in the sector suffer from incomplete and distorted information related to the costs and procedures required to obtain permits. This is because their major sources of information on the procedures were either the economic operators from whom they rent permits or from the police and forestry controllers to whom they pay unofficial taxes. It is therefore obvious that the police and economic operators take advantage of the situation by exaggerating the difficulties they may have to go through in order to keep them in the informal sector so that they will continue to seek unofficial taxes and rent from them. This is in line with Williamson's core concepts of bounded rationality and opportunistic behaviours that are characteristics of agents in a transaction as discussed in chapter two. The high prevalence of asymmetric information in delivering permits suggests that the government and NGOs in the forestry sector need to develop strategies to provide transparent information to this category of forests actors (traders) in order to improve their performance in the value chain and the forests sector in general.

High transaction costs may have the following consequences on the value chain:

*Reduction in Government revenue, increased corruption and misguided policies:* The study has shown that the GOC is a major loser in the permit system compared to rent seeking economic operators and corrupt police and forestry officers. Two possible explanations are that first, the activity of renting permits is illegal and the economic operators who rent out permits to traders charge higher amounts per kg than the government. On the other hand, traders carry more quantities than is declared on the rented waybills in order to make some money to pay unofficial taxes. If the TCs in obtaining permits were low, every trader would probably have a permit and less corruption would occur. The consequence of illegal activities is that a majority of the transactions are also not recorded. This reduces the visibility of products like NTFP that are often neglected in national policies as they are not included in national statistics because their value is overlooked (Schreckenberg *et al.* 2006a; Foundjem-

Tita *et al.* 2012b). The outcome of such neglected policies is that the permit system may not effectively contribute to regenerate the resource through the regeneration tax as expected. It is worth mentioning that, the arguments developed here are not geared at seeking massive and abusive exploitation of forests resources through reduced TCs to obtain permits. Rather they are meant to advocate for more effective and efficient policy instruments that will guarantee more control over, and regeneration of, forest resources compared to the existing flawed permit system.

*Increased consumer prices and lower producer prices:* consumers and producers of NTFP are the other losers of the system. As economic theory dictates, consumers are the final users of a produce and they definitely pay for any extra costs. Producers also pay for the extra costs as it is not uncommon for traders to capitalise on the unofficial taxes and costs to rent permits to bargain for lower producers'/collectors' prices (Ndoye 2005).

This study concludes that a majority of NTFP traders are motivated to apply for permits but TCs characterised by corruption, regulatory and procedural constraints and asymmetric information were perceived to be high such that only very rich entrepreneurs (economic operators) in the forestry sector could apply for them. It is thus recommended that other studies focus on strategies to reduce these TCs. While TCs to obtain permits have to be addressed, efforts also have to be made to reduce incidences of bribes collected by the police and forestry officers along major high ways. This is because incidences of bribes as we have demonstrated are important psychological determinants shaping the perception of traders and their decision to rent permits instead of going for own official permits.

The main limitation of the study lies in the refusal of economic operators who already have permits to answer our questions. This limited the possibility to do a comparative analysis of TCs influencing factors between holders and non-holders of permits. However, this may be taken up by other studies that may want to get insights into the illegal activities of the EOs as well as by studies that may do a more robust analysis of TCs as a motivation of non compliance in the entire forestry sector including both formal and informal timber exploitation. Secondly the study recommends that new policy instruments need to be instituted to reduce TCs but did not assess whether reducing TCs will decrease incidences of bribery and corruption that characterise the system. Other studies can pick up from here.

## **Chapter**

# **8 A Choice Experiment Approach for Assessing Incentives to Forest Law Compliance: Case of NTFP Traders in Cameroon**

### **Abstract**

Compliance with the law on permits governing Non-Timber Forest Product (NTFP) actors is generally low due to high transactions costs and other factors. While considerable efforts are being deployed to reduce illegal forestry activities in the Congo basin forests, literature suggests that efforts made so far have been concentrated on addressing illegal timber logging. This paper applies a choice experiment approach based on data collected from 70 traders to value policy options that are hypothesised to provide incentives for actors to comply with the law on permits. Results show that, decentralisation of the process of obtaining permits to the regions, possibility of joint or individual ownership of permits, transferability of the exploitation permit between traders, duration of exploitation permit and amount of regeneration tax were found to be significant in determining traders' choices to select a particular option. Based on their willingness to pay, the most-valued option by the sampled traders was decentralisation of the application process to the regions and reduction in the volume of paper work involved in the process. This study has implications for reducing illegality in the forestry sector where small scale actors are involved.

This chapter is based on:

D. Foundjem-Tita, S. Speelman, J. C. Tieguhong, O. Ndoeye, M. D'Haese, Z. Tchoundjeu, G. van Huylenbroeck, P. van Damme ( 2013). A choice experiment approach for assessing incentives to forest law compliance: case of NTFP traders in Cameroon. *International Forestry Review* (in press).

## 8.1 Introduction

The objective of this chapter is to apply a choice experiment approach to evaluate policy options that are hypothesised to provide incentives for small scale forest actors to comply with the forestry law governing trade in NTFP in Cameroon. As discussed in chapter seven, law compliance is an integral part of any governance system and refers to the extent to which subjects or actors respect prescribed behaviours (Young 2005; Blaser 2010; Ramcilovic-Suominen and Epstein 2012). It was reported in the previous chapter that in Cameroon as in many countries, forest products including Non Timber Forest products (NTFP) are harvested, transported and traded in violation of national laws governing such activities (Cerutti and Tacconi 2006; Assembe Mvondo 2009; Blaser 2010; Tieguhong *et al.* 2010). The negative impacts of such illegal forest activities include among others: degradation of forests and related goods and services; loss of government and private revenues (Contreras-Hermosilla 2002; Kaimowitz 2003; Blaser 2010) ; lower prices to NTFP collectors; negative and misguided policies towards programs such as agroforestry that may contribute in regenerating forest resources (Schreckenberg *et al.* 2006a; Betti 2007b). The World Bank for example reports that illegal logging alone is responsible for annual losses in global market value of more than 10 million USD and in government revenue of as much as five billion USD.

The magnitude of the problem has prompted national and international NGOs to put forest law compliance on the agenda of international forums (Blaser 2010; Tieguhong *et al.* 2010). In addition, researchers are continuously seeking solutions to advance scholarly investigations in order to assist countries to address the issue (Kaine *et al.* 2010; Ramcilovic-Suominen and Epstein 2012). Based on the outcomes of five of such international forums organised by the Food and Agricultural Organisation of the United Nations (FAO) and the International Tropical Timber Organisation (ITTO), the following points were identified as critical for a strategic approach to increase forest law compliance: ensuring broad and inclusive stakeholder participation; addressing the underlying causes of illegality; prioritising remedial actions and assessing the economic feasibility and social acceptability of proposed reforms (Blaser 2010).

In chapter seven an attempt was made to address the underlying causes of illegality related to NTFP permits from a transaction costs (TCs) perspective. This chapter will pay attention to two other factors listed above that are critical to increase forest law: (i) stakeholder participation in the development of policies and regulations and (ii) economic feasibility and social acceptability of proposed reforms aimed at reducing transaction costs and other vices governing the demand and supply of permits in Cameroon.

In the forestry sector, the participation of stakeholders in the policy and law making process is highly recommended (Mayers and Bass 2004a; Laird *et al.* 2009). Stakeholder participation should ensure that policies and laws reflect real needs and priorities and that they will be widely accepted (Sutinen and Kuperan 1999; Mayers and Bass 2004a; Laird *et al.* 2009; Kaine *et al.* 2010). Stakeholder participation in the policy and law formulation process is in line with more recent approaches to understand compliance with the law, which are based on a normative perspective (Sutinen and Kuperan 1999; Kaine *et al.* 2010). This incorporates elements of personal morality, fairness and legitimacy. In this regard, individuals are expected to comply with the law to the extent that they perceive such a law as appropriate and consistent with internalised norms (Sutinen and Kuperan 1999; Ramcilovic-Suominen and Epstein 2012). In this case key variables determining compliance are individual perception of fairness and appropriateness of the law. From an economic perspective, compliance is based on a rational choice model of human behaviour, which incorporates calculated costs and benefits of compliance (Ramcilovic-Suominen and Epstein 2012).

Most top-down approaches and command and control-style policies and regulations are often considered to be unfair and ineffective because they do not take into consideration the perceptions of those targeted by such institutions (Sutinen and Kuperan 1999; Mayers and Bass 2004a; Horne 2006). Consequently, when bottom-up approaches are used it is important to properly understand the extent to which individuals are motivated to change their behaviours to comply with proposed regulations (Kaine *et al.* 2010).

While considerable efforts are being deployed to reduce illegal forestry activities in the Congo basin forests, the literature suggests that the efforts made thus far seem to be concentrated on illegal timber logging and wildlife poaching, neglecting other illegal forest activities such as Non Timber Forests Products (NTFP) harvesting and trade (Tieguhong *et al.* 2010). The objective of this study is to contribute in filling this gap by investigating traders'



preferences for several policy options that are hypothesised to reduce transaction costs (TCs) and other barriers in the process of complying with the permit system governing trade of NTFP in Cameroon. Suitable policies could reduce the inefficiencies in the NTFP value chains and by increasing respect for the law, the credibility of state institutions, which are prerequisites for economic performance will be enhanced (North 1990). A method often used to elicit preferences or to evaluate policy options taking insights from target beneficiaries (stakeholders' participation) into consideration is choice experiments (Alpizar *et al.* 2001; Hope *et al.* 2005; Horne 2006; Sur *et al.* 2006; Speelman *et al.* 2010). This method will be used in this study.

Effectiveness and ineffectiveness of policies and regulations may be theory based (related to bad laws) and process based<sup>4</sup> (bad implementation of even good laws). While these issues have been raised in the preceding paragraphs, analyses in this study are limited to traders' acceptability of existing and proposed policies and regulations. In this regard, the actual effectiveness of the proposed policies and regulations will not be tested.

The rest of the chapter is organised as follows: first, we will make a short recall on the process of obtaining NTFP permits in Cameroon as described in the previous chapters. Secondly, the choice experiment method that will be used to assess traders' preferences for policy options will be explained. In describing the choice experiment method, the study will further elaborate on the permit system because the method requires that the set of policy options that are retained are properly described. The analytical and econometric foundation for analysing choice experiment data will come next. Finally the results of the study are presented followed by a discussion and conclusions.

## **8.2 Case study background- NTFP permit system in Cameroon**

As was discussed in the previous chapters, the right to sell NTFP in Cameroon is sanctioned by a permit system which deals with "special forests products" as prescribed by the 1994 Forestry Law (Government of Cameroon 1994). However it is not clear how the Government of Cameroon (GOC) defines "special forests products". Often it is understood that it consists of species with economic and environmental values (Ingram 2012). The unclear definition of

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<sup>4</sup> We thank an anonymous reviewer for this point.

special forest products actually makes it ambiguous which products are regulated by the permit system. Nevertheless, the day to day practice is that for most NTFP of high economic significance, traders are requested to show permits at road check points (Betti 2007b; Laird *et al.* 2010a; Ndoye and Awono 2010; Foundjem-Tita *et al.* 2012b). The majority of the traders, if not all, dealing in NTFP do not have their own permits, instead some of them rent permits. This practice is against the law as a result their activities are illegal (Djeukam 2006b; Betti 2007b; Awono *et al.* 2012; Ingram *et al.* 2012; Ingram 2012). Their decisions to operate illegally may not be an intentional act to overlook existing legislation, instead it may be related to the high TCs involved in the process of meeting the excessive legal requirements (Wells *et al.* 2007; Blaser 2010); see also chapter seven. Thus efforts are needed to reduce these high TCs and address elements that may be perceived as unfair.

Studies assessing transaction costs and options related to agri-envrionmental policies and regulations have been reported in Europe, the US (Stavins 1995; McCann *et al.* 2005; Mettepenningen *et al.* 2011) and in the forestry sector in some Latin American countries like Honduras and Nicaragua (Wells *et al.* 2007). Unfortunately the topic has not received much attention from researchers in Cameroon particularly not with regards to NTFP. Nonetheless, a few organisations like FAO and its partners have formulated proposals to the GOC aimed at reducing complications or in other words TCs related to the process of obtaining permits in the NTFP sector (FAO *et al.* 2010; Fokou Sakam 2010). The recommendations of FAO and its partners stem from stakeholders workshops. Literature on policy formulation processes however suggests that after the identification of such qualitative information by key informants through stakeholders workshops, policies should be subjected to a wider group for quantification and weighting of issues (Mayers and Bass 2004a). This provides the rationale for our study.

## **8.3 Methodology**

### **8.3.1 Why a choice experiment**

A choice experiment is a form of choice modelling that has its roots in the field of marketing and transportation where it was originally used to study the trade-offs between product characteristics and characteristics of different transport services offered. Increasingly, the

method is being used in the valuation of non-market goods (Alpizar *et al.* 2001; Birol *et al.* 2006). In the policy evaluation sphere, the method can be used to provide information on respondents' preferences which can be interesting for the purpose of developing policies and laws (Sur *et al.* 2006).

The decision to use a choice experiment in this study is guided by the opportunity it provides to contrast compatible policy options that may reduce TCs and other setbacks in the NTFP permit system in Cameroon. The technique entails presenting to respondents a number of combinations of characteristics (attributes) at different levels that describe a good. In this case, the combinations are related to regulations governing access to permits. For each choice scenario, they are asked to pick the combination of attributes they prefer most or that gives them the highest utility. When analysed, results can determine the relative importance of each attribute in determining preferences (Alpizar *et al.* 2001; Ryan *et al.* 2001a; Sur *et al.* 2006). In our case, it refers to the relative importance of each element to persuade traders to voluntarily apply and obtain permits required to trade in NTFP. In choice experiments that study the value of goods and services, respondents' willingness to pay is often indirectly evaluated by including the price of the good as one of the attributes (Hanley *et al.* 2001; Street *et al.* 2005; Speelman *et al.* 2010). In this study, respondent willingness to pay for shifts from one proposed policy option to another was evaluated by including a regeneration tax as one of the attributes.

There are several advantages of using choice experiments over other stated preference methods such as contingent ranking, contingent rating or paired comparisons. One reason is that choice experiments are suited for scenarios as ours where changes in attributes are multidimensional and trade-offs between them are of particular interests. In fact, the technique has the ability to identify the value of different attributes. Although contingent valuation techniques can be used as well, they are considered expensive and cumbersome as a series of contingent valuation scenarios would need to be included in the questionnaire (Hanley *et al.* 2001). Another advantage of the method is that respondents are given the opportunity to express their preferences on a varied but significant unknown future events (Hanley *et al.* 2001; Hope *et al.* 2005) whereas ranking methods are more used when the decisions to be evaluated are similar to the ones respondents have to make in everyday life (Ryan *et al.* 2001b).

When designing choice experiments, there is besides a good definition of the problem, the necessity to identify relevant attributes and attribute levels (Alpizar *et al.* 2001; Speelman *et al.* 2010). These are discussed below.

### **8.3.2 The choice of attributes and attribute levels**

Attributes selected should be those that affect respondents' choices and that are relevant to policy (Alpizar *et al.* 2001; Speelman *et al.* 2010). In this study, selection of attributes was guided by factors that are assumed to contribute to entice traders to comply with the permit system. Literature reviews, focus group discussions and stakeholder meetings are important in selecting attributes and their levels (Alpizar *et al.* 2001; Horne 2006). Based on this premise, a first set of attributes selected for this study was derived from a literature review amongst which a proposition made by FAO and partners<sup>5</sup> (FAO *et al.* 2010) to the Ministry of Forestry and Wild Life (MINFOF) for consideration in subsequent review of the 1994 Forestry Law. The proposition of FAO and partners to MINFOF was the result of two different stakeholders' workshops to identify weaknesses in current legislation governing the NTFP sector in Cameroon. Above all the workshops were organised in order to generate inputs to amend law N° 94/01 of 20<sup>th</sup> January 1994 governing the forestry, wildlife and fisheries regimes and its text of application (Fokou Sakam 2010). These workshops were organised in Bamenda in the Northwest region of Cameroon and in Ebolowa in the South region by FAO and its partners. Both workshops brought together a total of 173 actors representing 12 different categories of actors<sup>6</sup> in the NTFP sector representing 9 out of the 10 administrative regions in country.

Three main attributes of the process of obtaining permits to sell NTFP, relevant for this study, were identified at this stage: the process of obtaining an approval, the process of obtaining an exploitation permit and the payment of the forest regeneration tax. These are not the only requirements to obtain the legal status to sell NTFP in Cameroon, but they are considered the

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<sup>5</sup> Partners refer to a consortium of international organisations among which the International Centre for forestry research (CIFOR); the World Agroforestry Centre (ICRAF) and the Netherlands Development Organisation (SNV Cameroon). These organisations including FAO as lead participated in the execution of the project titled Mobilisation and Capacity Building of Small and Medium size Enterprises in involved in NTFP funded by the European Union.

<sup>6</sup> Actors invited to the stakeholders' workshop included: producers/ collectors, traders, local NGOs, international NGOs, law enforcement officers including police and forest guards, Employees from MINFOF, the media, local councils etc.

most difficult. Details about the process of obtaining legal recognition are found in Djeukam (2007) and Beti (2007b). The selected three attributes were further subjected to detailed focus group discussions involving traders and also individual discussions with 9 different experts working in the field of NTFP amongst whom: staff of the Netherland Development Organisation (SNV), FAO, ICRAF, CIFOR and MINFOF. Traders involved in the focus groups were a broad representation of the sampled group. Three different focus groups were organised with the traders. The first two was made up of 7 and 8 different traders and the third was a consolidation of the results of the first two. Ten traders from the previous two sessions attended the third focus group. The objective of the focus groups and the discussions with experts was first to gain insights into the three most important attributes identified in the stakeholders workshops and secondly to define the levels for each attribute.

Using more than 5 attributes in choice experiments may be detrimental to the quality of the information gathered because it increases complexity of the choice task (Mazotta and Opaluch 1995). A too high task complexity may cause fatigue and boredom in responses, leading to careless responses. The same may occur if the number of choice sets if the number of choice sets presented to each individual is too high or if there correlation between attributes (Alpizar *et al.* 2001). Therefore to reduce complexity, only the most essential attributes were retained in this study. The attributes retained are described below and summarised in table 1.

Most of what constitutes the attributes in this chapter has been discussed in chapter four and seven. However, to clearly explain their levels and reasons why they have been included in different choice sets, some repetitions could not be avoided.

### **The approval**

This is the first legal document to be obtained by a trader. It gives the holder the right to exploit any forest resource in Cameroon. This means that only when this document is obtained traders may proceed to process other legal papers. The problem related to obtaining an approval is that the process is centralised in Yaounde, the capital of Cameroon. In addition, the process of following-up the files is considered expensive with a lot of transaction costs involved (see chapter seven and also Laird *et al* (2010b) ). NTFP traders with comparatively limited capital are expected to file in the same documents as timber exploiters because the same approval applies to both categories of actors (Government of Cameroon 1994, 1995; FAO *et al.* 2010). This is considered illegitimate by NGOs and NTFP traders.

According to Kaine *et al.* (2010), one strategy to promote compliance among individuals with unfavourable attitude towards an intervention is to include behaviours advocated by these individuals provided policy objectives are met. With regards to an approval, it is advocated that a special approval should be issued for NTFP traders and the process should be made easier (FAO *et al.* 2010; Fokou Sakam 2010). Some traders and experts consulted respectively through focus group and expert meetings even argued that this document should be completely revoked for NTFP. Based on the fact that the selected attributes need to be policy relevant and meet the expectation of traders without jeopardising government objectives of conserving the natural, the research team concluded that the government may not abide to the option of entirely cancelling the approval. It was thus imperative to search for ways to reduce TCs involved in the process rather than thinking of abolishing the option.

The next question therefore was how to simplify the process? Two proposals came up during the focus group and expert discussions: (i) the number of documents to be submitted may be reduced and (ii) the process may be decentralised to the regions. To make the process easy, these two proposals were grouped as one option and then the status quo of obtaining the same document in Yaounde was maintained as another option. The main assumption here is that by instituting a special and simplified procedure to obtain an NTFP approval, obtainable at regional level, TCs involved in the process may be reduced and traders would be encouraged to apply for it.

### **Joint or individual approval**

Another issue that came up in the expert and focus group discussions was that traders might be encouraged to apply for permits if given the opportunity to work as a group. Actually, the 1994 *Forestry Law* states that any individual or moral persons (group) can apply for an approval. The simplest forms of organising farmers and other small scale rural enterprises are through common initiative groups (CIGs), associations or cooperatives (Government of Cameroon 1992). Currently, these forms of groups/associations are not allowed to apply for an approval and they would have to transform into limited liability companies in order to do so (Nguenang *et al.* undated).

Some traders have struggled to organise themselves into CIGs but have not been successful in the process (Ingram 2012). The imperative to transform CIGs and associations into limited

liability companies may have a negative effect on traders' decision because they believe that such companies/enterprises will be very big structures that have to pay a lot of taxes. Facilitating joint ownership through CIGs may permit a group of traders to join resources in this way reducing costs. It is even argued that when traders operate in groups, group pressure will compel group members to abide with the law (Sutinen and Kuperan 1999). It is also known that some individuals would also want to work individually in order to avoid negative effects of group activities on their business. Thus, two options were proposed to the traders: an individual or joined ownership application through CIGs.

### **Exploitation permit**

An exploitation permit is issued to traders after the latter obtain the approval. The permit gives the holder the right to exploit and sell a particular NTFP. The permit specifies the quantity and zone of action where the trader is supposed to collect the produce. The permit is issued for one year and a prerequisite for this is the payment of a regeneration tax of 10 FCFA per kg, irrespective of the species. Literature reviews (Betti 2007b; Fokou Sakam 2010) and focus group discussions highlighted two weaknesses of the permit system: transferability and duration.

#### *a. Transferability of permits*

Whether NTFP permits are transferable or not is not clear in the law. Confusion arises from article 42 (1) of the *1994 Forestry Law* which states that holders of permits can transfer or subcontract some of their rights. Paradoxically, section 42(2) stipulates that rights are personal and non-transferable. Detailed discussions with forestry officials, and NGOs advocating for farmers' and traders' right reveal that transferability currently is illegal.

Some NGOs and traders are against transferability with the argument that it favours non-NTFP professionals (mostly powerful business men) to use their financial powers to obtain permits. In line with Kaimowitz (2003), these financially viable permit holders are accused of encouraging corruption and of increasing the transaction costs in the permit system. That is, it is alleged that they use their financial powers to corrupt government officials to tighten conditions so that they can have the possibility to rent out their permits to the small scale traders who are unable to secure permits (Tieguhong *et al.* 2010).

Other traders argue that the process of obtaining a permit is too expensive for simple traders to obtain whereby limiting transferability will kick them out of business. Other studies show that, because of high TCs to obtain permits, traders prefer to rent rather than to go for the permits themselves (see Chapter seven and also Awono *et al.* (2012)). Other stakeholders propose that transferability should be authorised but should be regulated by the government. That is, if a permit is transferred, it should be officially recognised by the government. This is in contrast with the current procedure where business operators merely photocopy their letter heads and show them at check points in this way pretend that they are working for the permit holder. The choice experiment assesses which of these three options is most preferred by traders: no transferability, transferability with authorisation from the state or transferability based on mutual agreement between the permit holder and the borrower.

#### *b. Duration of exploitation permit*

FAO and its partners (Djeukam 2007; Fokou Sakam 2010) report that the short duration of a permit limits investment. This is true because money is involved in the process of obtaining an approval. Thus, a permit can be considered as an investment in the NTFP sector. Since NTFP permits are only valid for one year, traders complain that delays involved in the application process, prevent them from exploiting the quotas that are attributed to them. For example if it takes till October before the exploitation permit for one ton of *Irvingia gabonensis* is issued, and the trader pays the required regeneration tax to exploit one ton but only succeeds to exploit 50% of it by the end of December; s/he loses the remaining 50%. In this regard, by increasing the duration of the permit, traders would be able to carry over their quotas to the following year; it is expected that this would more easily allow for cost recovery. However, the main issue discussed in the focus groups was the duration of the permit. It was accepted that to avoid abuses, the permits should be limited to two or three years. To simplify the choice experiment, we opted for the status quo (one year) and an improvement to three years.

#### **Regeneration tax**

One of the reasons why Government sometimes devises policies and policy instruments such as the regeneration tax is to raise income to regenerate depleted resources (Betti 2007b). The regeneration tax has been described to be inconsistent and inefficient in controlling trade, in promoting regeneration and to be too high for traders (Ingram 2012). Thus, it can be considered as one of the reasons that discourage traders to apply for permits. Yet, other actors



in the chain think the amount charged is low and that it does not take into consideration the value of products (Betti 2007b; Fokou Sakam 2010). The low amount of taxes the government generates from NTFP may be one of the reasons why the sector benefits from less incentive-driven policies to encourage domestication and trade. During focus group discussions, some traders stated that the current charge of 10 FCFA/kg is not an issue to them and that they can pay more which is corroborated by the findings in chapter seven which shows that traders pay more for bribes in the current system. If this is the case, then government can actually benefit by charging higher rates. A good question to answer at this stage is, what is a trader's willingness to pay (WTP) in terms of a regeneration tax? A summary of the selected attributes and their levels is shown in table 8.1.

Table 8.1: Summary of attributes and their levels

Description of the selected attributes	Attribute levels	Effect being captured by the attribute:
<p>Type of document and where to apply for an approval (Type_EA)</p> <p>Whether special approval should be authorised for NTFP different from what timber exploiters do submit.</p>	<ol style="list-style-type: none"> <li>1. Decentralised-simplified procedures specific to NTFP obtained from the regions</li> <li>2. Centralised procedures obtained from Yaounde (statusquo)</li> </ol>	<p>Transactions costs (time and costs to obtain the legal status)</p> <p>Effect of other costs e.g. travel costs to Yaounde</p>
<p>Joint ownership of approval (JI_EA)</p> <p>Whether or not a number of traders can unite to apply for an approval as a CIG</p>	<ol style="list-style-type: none"> <li>1. Approval can be jointly owned by a group of traders through a CIG</li> <li>2. Approval should only be given to a single trader</li> </ol>	<p>Whether by jointly owning an approval traders reduce transaction costs and this will entice them to ask for permits</p>
<p>Transferability of exploitation permit (Tr_Ept)</p> <p>Whether a holder of an exploitation permit should transfer his rights to another trader provided the quantity authorised in the permit has not been exhausted</p>	<ol style="list-style-type: none"> <li>1. Can be transferred (statusquo)</li> <li>2. Cannot be transferred</li> <li>3. Can be transferred with authorisation from government</li> </ol>	<p>Whether by preferring to hire permits traders keep transaction costs low</p>
<p>Duration of exploitation permit (D_Ept)</p> <p>Number of years an exploitation permit should be valid</p>	<ol style="list-style-type: none"> <li>1. One year ( statusquo)</li> <li>2. Three years</li> </ol>	<p>Cost of keeping the agreement for a short period i.e if traders go for more than three years, then the costs of obtaining the document just for one year is comparatively higher</p>
<p>Regeneration tax (R_Tax)</p> <p>Up to how much can traders pay in terms of regeneration tax</p>	<ol style="list-style-type: none"> <li>1. 5 FCFA/kg</li> <li>2. 10 FCFA/Kg (statusquo )</li> <li>3. 20 FCFA/kg</li> </ol>	<p>To measure actual willingness to pay in terms of regeneration tax</p>

### 8.3.3 Designing the choice sets

In choice experiments, an experimental design is aimed at creating choice sets in an efficient way. This involves combining all attributes levels into alternative profiles (choice sets) to be presented to respondents (Alpizar *et al.* 2001; Hanley *et al.* 2001). Based on the number of attributes and their levels (three attributes with two levels and two attributes with three levels)

a total of 72 different combinations ( $2^3 \times 3^2$ ) would be a complete factorial design. It is obvious that 72 different combinations would be too many for an individual to choose from. It was thus important to reduce the 72 combinations into a manageable number from which traders could make their choices.









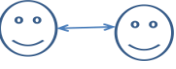



The approach most commonly used is the so-called orthogonal design which results in uncorrelated alternatives of attributes (Alpizar *et al.* 2001). The orthogonal design was developed using the ortho-plan function in SPSS version 17. This resulted into 16 different combinations. These 16 combinations (choice cards) were still considered too many and difficult to evaluate at the same time as it may lead to complexity (Hanley *et al.* 2001). For this reason it was decided that each respondent be given a maximum of 4 options at a time among which to choose. A procedure reported by Street *et al.* (2005) was used to construct the four different options. The procedure allows for independent estimation of all effects and leads to optimal designs for main effects and near optimal design for main effects with two interactions (Street *et al.* 2005).

The basic principle of the Street *et al.* (2005) procedure is to use the orthogonal output from SPSS as a starting point, generally as the first option, and then make systematic level changes using a generator and modular arithmetic to get option two, and another to obtain option three and so on. The end result is that as many pairs of profiles as possible have different levels for each attribute. Based on this methodology, 16 choice cards made up of 4 different options were obtained.

In order to use all the 16 choice cards, they were grouped into 4 blocks. The essence of the blocking is to reduce respondent fatigue which could result in low consistency (Adamowicz *et al.* 1998; Speelman *et al.* 2010). Each block contained 4 choice sets (cards) and each choice set contained 4 options from which the respondents had to select one. The 4 blocks were later divided into subsamples of our sample. Each respondent was randomly assigned to a block containing 4 choice cards. Since it was expected that some of the traders would not be able to read properly, some attribute levels were transformed in to pictograms (Speelman 2008). An example of a choice set is shown in table 8.2.

Table 8.2 Example of a choice card

Block 3 choice card 4

Attributes	Option 1	Option 2	Option 3	Option 4	None
Type of documents for exploitation agreement (Type E_A)					
Joint or individual JI_EA					
Transferability of permit (Tr_EA)					
Duration of permit (D_Expt)	1 year	3 years	1 year	3 years	
Regeneration tax (R_Tax)	20 FCFA	5 FCFA	10 FCFA	20 FCFA	
Assume these were the only options available. Which one will you choose? Tick only one box	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 8.4 Analytical Framework

The theoretical foundation for analysing data from the stated preference choice experiment is based on Lancaster's (1966) model of consumer choice. The econometric analysis is based on McFadden's (1974) conditional logit model grounded in the theory of random utility (Hanley *et al.* 1998; Birol *et al.* 2006; Horne 2006) .

### 8.4.1 The consumer choice model

Based on Lancaster (1966), individuals derive utility (satisfaction) from the attributes or the characteristics of a good rather than from the good itself. For an illustration of the model, consider a trader's choice for a given option, and consider that his utility (determined by the level of transaction costs) depends on the choices made from a choice set C, which contains a

number of all possible policy alternatives (four in our case). The trader is assumed to have a utility function of the form shown in equation 8.1.

$$U_{ij} = V(Z_j, S_i) + e(Z_j, S_i), \dots \dots \dots (eqn 8.1):$$

where  $U_{ij}$  represents the utility of trader  $i$  choosing a given option  $j$  from set  $C$ . The utility derived from any of the policy options depends on the attributes  $Z$  of the policy option and the socio-economic characteristics of trader  $S$  which may include his experience in the business, capital, age, education, availability of alternative sources of income, etc.

The random utility theory describes the utility  $U$  of each alternative in  $C$  as a sum of two components: a deterministic component ( $V$ ) and an error component ( $e$ ). The deterministic component is a vector of the alternative specific attributes and the characteristics of the individual respondent (trader). The error component ( $e$ ) is independent of the deterministic part and represents errors that arise from influences that are unobservable by the researcher. It is generally assumed that inclusion of the error term makes the choice random (Holmes and Adamowicz 2002; Horne 2006). In other words, the error component implies that predictions cannot be made with certainty (Birol *et al.* 2006).

Based on the random utility theory, an individual  $i$  will choose a given option from the choice set  $C$  if the utility  $j$  or ( $U_{ij}$ ) derived from that particular option is greater than that ( $U_{ik}$ ) obtainable from any other choice  $k$ , as shown in equation 8.2. This means that,

$$U_{ij} > U_{ik} \rightarrow V_{ij} + e_{ij} > V_{ik} + e_{ik} \quad \forall \quad j \neq K, \text{ and } j, K \in C \dots \dots \dots eqn 8.2.$$

Choices made between different alternatives are a function of the probability that the utility associated with a particular choice are higher than that related to another alternative. This means that the probability that an individual  $i$  chooses alternative  $j$  is the same as the probability that the utility of alternative  $j$  is greater than any other utility  $k$  in the choice set  $C$  as stated in equation 8.3:

$$P_{ij} = P(V_{ij} + e_{ij} > V_{ik} + e_{ik}) \quad \forall \quad j \neq K \text{ and } j, K \in C \dots \dots \dots eqn 8.3.$$

### 8.4.2 The econometric model

An assumption often used is that the error terms  $e_{ij}$  are independently and identically distributed with an extreme value (Weibul) distribution (Hanley *et al.* 2001). This assumption will lead to the conditional logit model, which is most widely used in analysing multi-attribute choices (Horne 2006). The conditional logit model (McFadden 1974; Greene 1997) for individual  $i$ , choosing option  $j$  over the others can be given by equation 8.4:

$$P_{ij} = \frac{\exp^{V_{ij}}}{\sum_{j,k \in c} \exp^{V_{ik}}} \dots \dots \dots eqn 8.4$$

Generally, the conditional indirect utility function estimated is shown in equation 8.5.

$$V_{ij} = \beta + \beta_1 Z_1 + \beta_2 Z_2 + \dots \dots \dots \beta_n Z_n + \varphi_1 S_1 + \varphi_2 S_2 + \dots \dots \varphi_m S_m \dots \dots \dots eqn 8.5 :$$

where  $\beta$  is the alternative specific constant (ASC) that captures the utility of any attribute that is not specified in the choice set;  $n$  is the number of attributes and  $m$  the number of socio-economic variables describing the trader. The coefficients  $\beta_1$  to  $\beta_n$  and  $\varphi_1$  to  $\varphi_m$  respectively capture the influence of the vector of attributes studied and the vector of socio-economic characteristics describing each trader. The socio-economic variables do not vary across the different options selected by each trader. In this regard, they are only included in the model as interaction terms with the choice specific attributes (Hanley *et al.* 2001; Birol *et al.* 2006). The coefficients obtained from the interaction terms can be used to interpret the effect of the socio-economic characteristics in determining choices (Speelman *et al.* 2010).

Once the parameter estimates have been obtained, willingness to pay can be calculated for each attribute (Alpizar *et al.* 2001; Hanley *et al.* 2001). For a linear utility function such as that expressed in equation 1, willingness to pay can be simply articulated as in equation 8.6:

$$WTP = - \left( \frac{b_c}{b_y} \right) \dots \dots \dots eqn 8.6,$$

where  $b_c$  is the coefficient of any of the attributes and  $b_y$  is the coefficient of the monetary value in equation one; in this study, it refers to the regeneration tax. Equation 8.6 is also

referred to as the path worth (implicit price) formula and represents the marginal rate of substitution between the monetary value (regeneration tax) and the other attributes in the equation.

## **8.5 Data collection and entry**

The study population was made up of traders specialised in selling four different NTFP in Cameroon (for details on choice of traders and markets, see Chapter seven).

Before each interview, the objective of the exercise was explained to the respondent. Specifically, a brief explanation was given on how the exercise could contribute to improve the policy related to the procedure to obtain permits. Traders were also explicitly informed that participation was voluntary. The symbols that relate to each attribute and their levels were carefully explained to each respondent in a step-by-step process and a test was made to ensure that they had clearly understood the process. Those who failed the test after two attempts were excluded from the sample. The questionnaire also included questions related to the socio-economic characteristics of the respondents and others targeted at meeting other objectives. A description of the socio-economic variables is found in table 8.3. Each survey took between 50 and 90 minutes depending on the ability of traders to grasp the concept of the choice experiment and other questions as defined in chapter seven. The questionnaire was personally pre-tested and administered by the author. This was to make sure the quality of information collected was consistent.

In all, 280 choices were elicited from 70 traders who accepted to take part in the survey. Data collected were entered in SPSS version 17 and later saved in the statistical package Stata 11.0. The conditional logit models were analysed using Stata 11.0. In performing the conditional logit models, all quantitative variables such as duration of permits and regeneration tax were directly entered. The coefficients in the model therefore show the effect of the magnitude of these variables. The qualitative attributes were effect-coded. This means that the base level of a given attribute is assigned a value of -1 while the other levels may take values of 0 or 1. Holmes and Adamowicz (2002) showed that this way of coding reduces problems of collinearity with the intercept, which might occur if the attribute levels were dummy coded.

Interested readers are referred to their book chapter for the technicalities of this (Holmes and Adamowicz 2002). Base levels for the three qualitative variables used are as follows: for type of documents, the base level was ‘complicated-centralised procedures’; for joined or ‘individual’ exploitation agreement, the base level was individual and for transferability of permits, the base level was ‘no transferability’.



Table 8.3: Socio-economic characteristics of respondents

Variable	Description	Percentage	Mean (s.d)	Range
Principal activity	If species is traders principal source of revenue	No = 19 Yes = 81		
Species		Gnetum = 30 Irvingia = 31 Kola = 26 Ricinodendron = 13		
Membership	If respondent belong to a traders association	No = 46 Yes = 54		
Sex	Sex of respondent	Female = 40 Male = 60		
Boundary of exchange	Level of exportation	Low export = 37 High export = 63		
Experience of trader	Number of years trader has been in the NTFP business		11.4 (9.16)	1-50
Value_FCFA	Trader's annual turnover in 2011 in 1000 FCFA		24,768 (31,862)	250-150,000
Age	Age of respondent		40(8.30)	23-65
Household	Household size		7.9(3.86)	1-18
Education	Number of years of education		10.7 ( 3.20)	0-17

## 8.6 Results

A description of the socio-economic characteristics of the traders interviewed has been given in chapter seven. This is summarised in table 8.3. Results of the conditional logit models are shown in table 8.4. Model 1 is the basic model and illustrates the effect of different attributes in determining traders' decision to apply and obtain NTFP trade permits. The attribute specific constant (ASC) included in this model represents the utility gains linked to not choosing any of the options provided to the traders. Even though the ASC was not significant, the negative sign suggests that choosing the opt-out alternative decreases implicit utility. This means that all things being equal, traders would prefer to see some changes in the current procedures based on the alternatives provided to them.

Based on model 1, all the attributes except transferability with authorisation from the government had a positive and significant effect in determining traders' choices. In other words, there is a preference for a decentralised and simplified process compared to a centralised and complicated one. Traders also prefer joined permits through traders' group and not through limited liability companies. Also, transfer of permits between traders and an increased duration of a permit improved the chances that an option was selected by a trader. On the other hand and in line with basic economic theory, an increase in forestry tax had a negative significant effect on the probability for a particular option to be chosen. This therefore means that traders would prefer lower regeneration taxes.

Table 8.4: Conditional logit model: determinants of choice to obtain permits

Attribute	Model 1		Model 2	
	Coefficient	SE	Coefficient	SE
Attribute-specific constant (ASC)	-14.73 ns	47.331	-15.30	512.97
Simplified decentralised procedures (base level: complicated procedure)	1.06***	0.09	1.10***	0.33
Joint ownership of an approval (base level, single ownership)	0.45***	0.08	0.49***	0.18
Traders based transferable permits (base level, non transferable permits)	0.42***	0.11	0.44**	0.21
Government based transferable permits (base level non-transferable permits)	0.05 ns	0.11	0.34***	0.15
Duration of exploitation permit	0.27***	0.08	0.28**	0.13
Regeneration tax	-0.06***	0.01	-0.05***	0.01
Membership in traders association*Joined ownership			0.60***	0.17
Experience in business*government based transferable permits			-0.027**	0.011
Sex*joint ownership			-0.57***	0.17
<i>Model statistics</i>				
Log likelihood	-362.15		-34'.98	
Pseudo R <sup>2</sup>	0.28		0.31	
Chi square	0.00		0.00	

\*\*\* Significant at 1%, \*\* significant at 5%, ns = non significant

In order to target policies that satisfy traders with different socio-economic characteristics it may be useful to know how certain socio-economic variables influence traders' choices. To meet this objective, only those socio-economic factors that were anticipated to influence preferences for specific attributes were chosen. For example, it was anticipated that, traders with relatively less capital, and those who are less educated would prefer joint exploitation agreements compared to traders who have more capital who may opt to operate individually. However, because of incidences of co-linearity that arise when many socio-economic

variables are included in a model (Holmes and Adamowicz 2002), several interactions were tested following Speelman *et al.* (2010) by running different models. Those that were consistent were finally retained.

Results of different interactions reveal that most socio-economic variables shown in table 8.3 were not significant in determining choices. However, membership in traders' associations, sex of the trader and experience in business were found to significantly influence the choice of respondents.

As was indicated in equation 8.6, by assuming a linear utility function, the monetary value of a marginal change from one attribute level to another (willingness to pay) is derived by dividing the implicit marginal utility of that attribute (coefficient) by the implicit marginal utility of the regeneration tax. Willingness to pay values (table 8. 5) derived from model 2, and subject to the socio-economic characteristics of traders can be viewed as the value of a marginal change from one attribute level to another. For example, a change from a centralised-complicated procedure to a decentralised-simplified procedure is valued at 22FCFA per kg (table 5) while an increase in the duration of permits by one year is valued at 5.6 FCFA per kg. This implies that a decentralised and simplified process is four times as important as increasing the duration of permits from one to three years. The positive signs on the willingness to pay values suggest that traders are generally going to benefit from a change in any of the attributes.

Table 8.5: Valuation of attribute changes

Attribute change	Implicit willingness to pay FCFA /kg
Complicated to simplified	22.00
Single to joint	9.80
No transfer –traders-based transfer	8.80
No transfer –government-based transfer	6.80
Increase in duration of permit by one year	5.60

## 8.7 Discussion

This study used choice experiment as a method to incorporate stakeholders' views in the design and evaluation of policy options and to assess traders' perceptions about proposed regulations that are expected to entice them to better comply with the forestry law governing trade in NTFP in Cameroon.

Results of the study show that all the selected attributes contributed in influencing traders' choices of complying with the law. In other words, the traders would prefer to choose one of the proposed options rather than to opt not to choose any. Above all, these results suggest that all the attributes were relevant to the traders. This relevance may be related to the validity of the choice experiment which takes into consideration insights from the target beneficiaries through stakeholders' workshops and focus group discussions, the latter involving representatives of the sampled population (Alpizar *et al.* 2001; Horne 2006). This approach contributed in selecting those options that the traders' considered were fair or would contribute in reducing transaction costs in the process of complying with the permit system. The results therefore confirm two things (i) that participatory approaches are useful in selecting options relevant to formulating policies and legislations (Sutinen and Kuperan 1999; Mayers and Bass 2004a; Blaser 2010; Kaine *et al.* 2010; Ramcilovic-Suominen and Epstein 2012) and (ii) that choice modelling is ideally suited to analyse the significance of the selected options (Hanley *et al.* 2001; Birol *et al.* 2006).

Based on the WTP measures, the option most valued by the sampled traders was decentralisation of the application process to the regions and reduction in the volume of paper work involved. For example, by decentralising and simplifying the process, traders would be made better off to the extent of 22 FCFA/kg. This is higher than the current regeneration tax of 10 FCFA/kg. This means that most traders may be willing to pay a higher regeneration tax in order for the process to be simplified. If this is done the benefit does not only accrue to traders because regeneration tax can be an important source of revenue for the Government (Betti 2007b). The latter interpretation of traders willing to pay higher regeneration taxes is different from the negative sign obtained for the coefficient of the regeneration tax in table 4. The sign for the coefficient of the cost component in the choice experiment is interpreted as a test for theoretical validity of the model (Alpizar *et al.* 2001; Speelman *et al.* 2010). The negative sign obtained in this study is thus in line with rational economic thinking that

individuals would like to minimise cost which suggest that all things being equal, traders would prefer to pay lower regeneration taxes. However, they would prefer to pay higher regeneration taxes to see the process improved from complicated to simplified procedures.

Some socio-economic indicators such as turn-over, which was used as a proxy for capital, were hypothesised to influence most of the attributes and attribute levels. However, it did not turn out to be a significant factor. This is definitely because most traders interviewed are small scale traders which imply that variability amongst them was too low to capture an effect. The policy implication of this is that traders, at least of the sample population generally perceive problems related to permits in the same way and a common policy will be binding for all of them. However to have a bigger picture of the policy options to improve compliance in the forest sector in Cameroon, it would be important to extend this study to other sectors where illegal activities are common such as illegal timber exploitation and wildlife poaching.

Literature reports that marketing groups can play significant roles in reducing transaction costs related to the search of information, negotiation and monitoring of activities (Griffon 2001; Bienabe *et al.* 2004; Shepherd 2005; Tieguhong *et al.* 2012b) and this has been empirically reported to be possible in the NTFP sector in Cameroon (Foundjem-Tita *et al.* 2011). As expected therefore, membership in traders association had significant positive effects on traders' decision to choose joint approvals. This is important as one of the political objectives of facilitating CIGs in Cameroon is for small scale actors to mobilise limited resources to meet costs, something that would not be possible if traders operated individually. Narrative discussions with some traders revealed that the desire to obtain official papers is one of the main objectives why such groups remained united. It is therefore obvious for traders who are in groups to derive higher utilities for joint exploitation agreements than those who operate individually. Although traders' focus in this case is on reducing transaction costs, the role of groups in facilitating compliance through the application of social sanctions to members has also been reported (Ostrom 1990; Sutinen and Kuperan 1999; Ramcilovic-Suominen and Epstein 2012). Thus if CIGs are also allowed to apply for permits members can put pressure on others to comply with the law.

Women are generally reported to be less successful in small businesses than men (Loscocco *et al.* 1991; Shelton 2006; Chirwa 2008; Amine and Staub 2009; Coleman and Robb 2009) but in this study women had significantly higher capital compared to men. Capital was not

significant in determining choices, meaning that the nature of the business characterised by harassment from forestry and police officials requesting permits at check points may explain why more women compared to men would prefer to operate as a group. The choice of women may be related to the fact that they may not have equal resistance to confront the police and forestry officials, thus by joining common initiative groups they feel they can easily succeed in going through the process. The latter explanation is supported by Amine and Staub (2009) who report that women entrepreneurs in sub-Saharan Africa face daunting array of challenges which negatively affect their business. These negative challenges generally stem from the socio-cultural, economic, legal and political environment in which they live. These additional prejudices are expressed through differential attitudes towards women in general.

Compared to no transferability the introduction of a transferable permit system regulated by the government did not significantly increase the preference of the traders. However when the government regulated permit system was interacted with experience in business, the effect became negatively significant. The negative significance means that traders with experience in handling the species were less likely to be motivated by transfers of permits that had to pass through the government. This is probably related to negative experiences with bribery and corruption encountered in dealing with forests and police officials who enforce the law on permits (Cerutti and Tacconi 2006; Ndoye and Awono 2010). This negative experience might have resulted in a general lack of trust in government institutions by the experienced traders. The implication of this is that even if the Government of Cameroon allows transferable permits, they may not be readily accepted as traders will be distracted by high transaction costs involved in the transfer procedure if the government coordinates the transfers.

## **8.8 Conclusions**

Given the difficulties stakeholders in the forestry sector face to comply with laws which sometimes are related to transaction costs resulting from excessive regulations or dissatisfaction as a result of perceived unfairness of laws and regulations; it is important for research to assist policy makers through the provision of advice about rational and legitimate preferences as perceived by targeted stakeholders and feasible on the part of the Government. The case study applied the choice experiment technique to elicit traders' evaluation and

preferences for various policy options that are hypothesised may lure them to comply with the regulation on NTFP permits in Cameroon.

Results reveal that the following factors were significant in determining traders' choices to select an option and would thus encourage compliance with the permit system: (i) CIGs and not only limited liability companies should be recognised as organisational structures that are eligible to obtain permits; (ii) the process has to be simplified by reducing paper work and by decentralising procedures to the regions; (iii) transfers between permit holders should be allowed and, (iv) the duration of the permit should be increased by at least one year.

Because all the selected attributes were significant in determining traders' choices, the approach supports existing knowledge that stakeholders' participation is an important process in the design and formulation of policies and laws that can be widely accepted by the targeted group. Likewise, choice experiment can be an important method to enhance stakeholders' participation because it makes provision for a representative sample of the target group to take part in the selection of attributes and their levels. In this respect, aspects of economic feasibility (transaction costs reduction) and social acceptability (perceived fairness) of the proposed policies and regulations are assessed by the target group.

To the best of our knowledge this is one of the few studies that used the choice experiment technique to assess policy options in the NTFP sector especially when applied to the Congo basin forests. As such, the relevance of the method needs to be tried in other empirical research especially in selecting the most important attributes and their levels that are relevant in the formulation of new policies and laws.



## **Chapter**

### **9 General conclusions**

#### **9.1 Recapitulation of research design and objectives**

An analysis of the policy and institutional context within which production and commercialisation of NTFP/AFTP takes place is important, in order to better understand, how incentives can be improved to increase the performance of actors across the value chain. This is especially so because the institutional environment creates the framework and conditions under which stakeholders develop alternative types of institutional arrangements necessary for production and exchange to take place. With regards to agroforestry, adequate policies are required to support development and adoption of new technologies. An adequate institutional environment is expected to enhance property rights to land and trees and reduce transaction costs related to the marketing of NTFP/AFTP.

The study was divided into three parts. Part one consisted of chapters one to three. In chapter one, background information related to the problems faced by the NTFP and the agroforestry sector in Cameroon was presented. This led to the identification of policy and institutional gaps that needed to be covered in the rest of the study. The general theoretical literature on NTFP and AFTP was inconclusive on several vital questions with regards to policy and institutions. This study sought to answer four of these questions:

- What formal policies or strategies and regulations currently exist to address agroforestry development in Cameroon?
- What are farmers' awareness and attitudes towards these policies and legislation or regulations in relation to agroforestry development?
- How do formal and informal rules interact to manage both NTFP and AFTP, including access rules to land on which these species grow?
- How do traders dealing in our target products, cope with formal rules governing trade and how do these rules affect their activities and performance in the value chain?

Chapter two explored the theoretical and conceptual framework adopted to answer the key research questions. The main theory used was the New Institutional Economics with focus on Oliver Williamson's four levels of institutional analysis (Williamson 2000a). Based on this theory, a conceptual framework was developed inspired by the Institutional Analysis Development framework proposed by Ostrom *et al.* (1994). The framework presented actors in the NTFP/AFTP value chain and their interaction with specific formal and informal rules governing access, production and trade in NTFP/AFTP and how these interactions may lead to different outcomes. Chapter three dealt with the setting. It described the studied species and the sampling plans for regions, products and respondents.

Chapter four to eight are the empirical chapters. They addressed four main issues of relevance to the policy and institutional environment within which NTFP/AFTP actors in Cameroon operate. First, in chapter four, an analysis of existing government policies and legal frameworks governing access to and trade in AFTP/NTFP in Cameroon was performed. We analysed from a theoretical perspective whether the policies and legislation provide incentives or are rather disincentives for agroforestry development.

Farmers' awareness and perception of existing policies and institutions and how they affect their property rights to land and trees are crucial in determining their decision to adapt to institutional changes related to agroforestry development. Within this context, farmers' perception of the legal framework governing trees in Cameroon was analysed in chapter five. In the same chapter, their willingness to accept proposed policy instruments (certificates of origin), hypothesised to overcome recognised gaps in current legislation governing trees was also analysed.

In analysing institutions governing natural resources, an understanding of both formal and informal rules governing a resource is often recommended. One area where both formal and informal rules interact in the management of the same resource is land. In chapter six, the concept of tenure security as a factor to agroforestry development has been specifically studied. We thus examined: how farmers perceive ownership of land in their community; and whether they perceive land titles as an institution that may give them more security to their land and trees compared with the present customary laws governing ownership. The relationship between farmers' perception of tenure security and tree planting was also established

Chapters seven and eight focused on institutions governing trade in NTFP. If NTFP traders as a link in the value chain cannot conveniently sell NTFP, then producers will not have a market for their produce and this may hinder production. Chapter seven was based on the premise that where the institutional environment is not sufficiently developed to support market activities, actors will often develop specific arrangements to coordinate their activities. The chapter specifically focused on institutional arrangements to obtain permits to sell NTFP in Cameroon. It considered the ability of NTFP traders to comply with prescribed laws governing the demand and supply of permits. Analyses further investigated whether existing institutional arrangements have the potential to generate corruption and rent seeking attitudes amongst actors in the chain. In addition, winners and losers of the permit system were further analysed.

In chapter eight, we consider how traders' access to permits could be improved by analysing through a choice experiment different policy options that may meet government objectives of conserving NTFP resources, generate revenue to renew the natural resource, reduce rents and corruption and at the same time be affordable to traders.

## 9.2 General discussions

The main empirical findings are chapter specific and were discussed within the respective empirical chapters. The objective of this section is to synthesize and briefly discuss the empirical findings to answer the main research questions posed in chapter one.

- *What formal policies or strategies and regulations currently exist to address agroforestry development in Cameroon?*

A review of policy documents and mission statements from the Ministries of Agriculture, Forestry, Environment and other rural development programs indicate that *no specific agroforestry policy or strategy document* exists for Cameroon. However, elements of an agroforestry policy can be found in major government policy documents related to agricultural development, forestry and poverty alleviation. There does seem to exist a commitment of the government of Cameroon to include elements of NTFP in its natural

resources management, and poverty reduction policies and therefore indirectly promote agroforestry.

Even though several ministries in Cameroon have agroforestry and related tree planting activities in their portfolio, none of them has the mandate to coordinate such activities to ensure that both environmental and livelihood concerns are properly addressed. The result is confusion as to which activities, amongst numerous tree planting programs, fall within the domain of agroforestry, forestation or afforestation; what species need to be planted where, at what planting distances and with which crops, etc. The abundance of afforestation and reforestation programs to address environmental issues, specifically from the Ministries of Forestry and Environment may undermine the important role the Ministry of Agriculture should play in coordinating agroforestry development in Cameroon with particular focus on the interaction between crops, animals and trees on a piece of land, which is actually the essence of agroforestry.

- *What are farmers' awareness and attitudes towards policies and legislation or regulations in relation to agroforestry development?*

Forestry legislation governing trees in Cameroon (*1994 Forestry Law*) designed with the good intentions of conserving natural resources, potentially limits farmers' economic rights to exploit NTFP and *de facto* limits their rights to the trees they plant on their farms. In fact, the law defines forest products by saying that they differ from agricultural products, but does not define agricultural products. In line with Belcher (2003), this leads to confusion as to whether products harvested from farm trees shall be considered as agricultural products or forestry products. This is particularly unclear for the tree and vegetable species studied in this thesis which are also found in the wild, such as kola (*Cola* spp.), bush mango (*Irvingia gabonensis*), njansang (*Ricinodendron heudelotii*), and *Gnetum* spp.

Based on the *1994 Forestry Law*, local populations are conferred usufruct rights which constitute the right to exploit NTFP for personal use, but not for commercial purposes. The implication is that farmers' property rights are poorly defined, as the products coming from their farmland are subjected to control for permits. The effect of permits may not have a direct consequence on farmers' decisions to either sell or plant the species because most of them sell at the door step and are seldom controlled for permits. But if farmers were to transport their produce to urban markets themselves they would be subjected to forestry control. Analyses of

farmers' awareness reveal that a significant majority are not aware of official regulation governing access and trade in the selected species. Having explained the official legislation to them, about 40% declared they would stop dealing in the selected species if the law on permits were properly enforced. The reason why most farmers would still plant indigenous trees even if the regulations in play were effectively enforced is that agroforestry forms an integral part of their traditional farming systems and livelihoods, as has been reported by several authors (Russell and Franzel 2004; Schreckenberg *et al.* 2006a; Tchoundjeu *et al.* 2006). Yet, as the regression analyses show, some farmers especially those closer to markets may easily give-up tree planting probably due to more interesting income generating opportunities provided to them. A significant majority (61%) are ready to accept new policy instruments, such as certificate of origins to distinguish farm products from those harvested from the wild.

- *How do formal and informal rules interact to manage both NTFP and AFTP including land on which these species grow?*

The concept of tenure security and interactions between formal and informal institutions in the management of land and trees were investigated in chapter six. Following the 1994 *Forestry Law*, trees planted on land without a title deed belong to the state. According to the 1974 *Land Ordinance*, ownership of land is only granted if a person claiming rights to land has a title deed. But there are arguments for and against land titles in literature. However, not much is known about farmers' perception of land ownership and tenure security especially in the context of agroforestry production. Whether and which of the systems (formal or informal) gives more security over farmers' land, therefore remains an open question.

Although all respondents claim individual ownership over plots they are farming, a majority of them (76%) feel that they are not the real owners of the land. They share the symbolic views that land is the property of the chiefs, or community (46%) and the government (23%). A right to sell is limited as 81% cannot sell their land without prior authorisation of members outside of the household.

Eighty percent of the sampled farmers would accept land titles to guarantee security over the land for which they claim ownership. When they were given the opportunity to choose between land titles and customary systems of securing ownership, a majority 59% still opted for land titles against 41% who chose the customary system. Nevertheless, further analysis

indicates that 25% switched from the formal to customary system. Regression analysis showed that farmers from communities that had resisted cultural decay were more likely to choose customary institutions compared to those whose traditional values had been comparatively more tempered by modernity and colonisation. Similarly, analysis of tenure security based on fear of eviction by either the Government using formal laws or traditional authorities using customary rules shows that farmers have more trust in traditional institutions.

Almost all the interviewed farmers (97%) reported that fear of eviction was not a factor that stops them from planting. Instead, 29% feel that lack of available land is more a handicap to tree planting. This suggests that land availability may be more limiting to agroforestry development than the aspect of tenure security.

For the three studied fruit species (*Irvingia gabonensis*, *Ricinodendron heudelotii*, *Cola* spp), farmers' main sources of harvest/collection were from land on which they claim individual ownership. Only 11% collected/harvested from what may be termed 'wild' sources. Out of the 394 farmers, forty percent had planted at least one of the studied species since they took over the land from their parents. Most households had exclusive rights over the studied fruit trees that are found on all land use types for which they claim to have private ownership. High prevalence of exclusive rights is an incentive to the process of domestication or tree planting. This is true because with such rights farmers' investments in NTFP are secured. This is however different for the case of *Gnetum* spp. As reported by Ingram *et al.* (2012) trespassing is still common on individual *Gnetum* plots suggesting that customary institutions are yet to adapt to the transition of *Gnetum* as an agroforestry product.

- *How do traders dealing in the products cope with formal rules governing trade and how do these rules affect their activities and performance in the value chain?*

Analysis of institutional arrangements in the demand and supply of permits (Chapter seven) in the NTFP sector reveals high levels of non-compliance with the law. Factors motivating non compliance are generally related to high transactions costs involved in the process of applying for permits. This is characterised by a high nominal amount to be paid for the permit; and limited access to information and complicated bureaucratic processes. Laws that fail to reflect and fit in with the situation on the ground or that are perceived as unfair often lead to situations of illegality (Ramcilovic-Suominen and Epstein 2012). This is characteristic for the

situation in Cameroon. The amount required to process and obtain the necessary legal documents may be beyond the financial capacity of a majority of the traders involved in the NTFP business.

Even though the process is generally complex, non-compliance is further aggravated by instances of opportunism and bounded rationality. Law enforcement officers take advantage of the fact that traders are not informed about the procedures and circulate distorted information making the process seemingly impossible for these traders. By so doing, they increase their chances of seeking rents from traders who are often apprehended for not having permits. Our findings confirm results from other studies (Cerutti and Tacconi 2006; Blaser 2010) stating that corruption and high transaction costs to meet complicated government imposed procedures are major sources of non-compliance in the forestry sector.

By using the NIE theory to analyse non-compliance, this study thus concludes that compliance with the law on permits on the one hand is a rational choice by traders to overcome high costs. By paying bribes they make more benefits than what they may gain if they go for permits. On the other hand, the decision not to comply with the law is not only limited to benefits and costs, it is also a result of constraints imposed by formal regulations that the traders generally refer to as ‘too complex’. In chapter seven, it is reported that none of the traders had permits. When asked if they would want to have one about 96% said yes. Some of their reasons for desiring to obtain permits reflect the moral part of these traders as can be derived from responses such as the ‘desire to respect the law and to contribute to State revenue’ (36%) which means that morality or moral norms as part of institutions are key in determining economic performance (North 1990) and may also support the findings of other authors that morality and moral norms can catalyse compliance with the law (Sutinen and Kuperan 1999; Kaine *et al.* 2010; Ramcilovic-Suominen and Epstein 2012).

Understanding and predicting the extent to which individuals are motivated to change their behaviours to comply with proposed regulations is critical to understanding how effective proposed regulations can be (Kaine *et al.* 2010). This was the objective of chapter eight. The choice model applied to assess policy options showed that traders would comply with the law on permits under the following conditions: (i) CIGs should be recognised as organisations that are eligible to obtain permits; (ii) the permit system has to be simplified and decentralised to the regions; (iii) transfers between permit holders should be permitted; and (iv) the duration of

the permit should be increased by at least one year. In addition, the study found that simplifying paper work and decentralising the process to the regions was the most valued alternative selected by traders. Following Alpizar *et al.* (2001), the choice experiment method has proven to be useful in evaluating policy options because it takes into consideration the interest of the target audience in the design and assessment of policy options (Alpizar *et al.* 2001; Hope *et al.* 2005). Policy makers can thus use the information to guide reforms in the NTFP sector.

Besides giving information on WTP, the study clearly shows which policy option may have a significant effect on traders' decisions to comply with the law. However, this study does not necessarily imply that reducing transaction costs by applying the above mentioned attributes will reduce illegality or increase compliance in the NTFP sector because, as illustrated in the literature, many other factors may influence compliance amongst which the capacity of individuals to change their behaviour in a way that complies with regulations (Sutinen and Kuperan 1999; Kaine *et al.* 2010; Ramcilovic-Suominen and Epstein 2012). In this case, the moral part of traders hitherto stressed in the preceding paragraph is an important factor to be considered. The results of this study should thus be considered as part of a broader framework to increase compliance in the NTFP sector but by applying the choice experiment results, it is almost certain that aspects of perceived fairness and legitimacy of legislation or regulation would be addressed, because the attributes were based on participatory procedures and thus reflect traders' expectations.

### **9.3 Linking research results to outcome indicators**

In the theoretical and conceptual framework outlined in chapter two, it was illustrated that the interaction between actors, institutions and activities in the NTFP/AFTP value chain determines the outcome of the value chain. Outcomes were identified to be relevant factors (varying objectives for participating in the chain) against which the participation of selected actors in the chain could be evaluated. The results of the research questions for each group of actors (GOC, producers and traders) have been addressed in details in the respective chapters of this study. The objective of this subsection is to make a brief link between research results and the selected outcomes (performance indicators).



Starting with the GOC, it would be interesting to answer whether existing government policies and policy instruments governing access to and trade in NTFP/AFTP meet government objectives of poverty reduction and conservation of the natural resource base? As shown in chapters four and five, policy instruments intended to conserve the natural resource base discourage the cultivation of indigenous species as these policies limit trade in NTFP with indirect repercussions on AFTP. This is in contradiction to government policy to reduce poverty which takes into consideration sustainable use of the natural resource and their contribution to the income of rural dwellers. The regeneration tax is expected to contribute to the conservation and regeneration of the natural resource (Government of Cameroon 1994). Contradictorily, and in line with Betti (2007b), results in chapter seven shows that the GOC gains virtually nothing from such a tax and it is a victim of its own policies as rent seekers and corrupt police and forestry officers make more money from unofficial taxes and rents compared to the government. As a consequence of the latter, appropriate funds cannot be raised to put in place the right programs to regenerate the natural resources base as envisaged. Instead, one can be forced to conclude based on traders' declarations as typified in chapter seven that the species are overexploited to meet up with the demand of unofficial taxes charged by the police and forestry and rent seeking EO leading instead to a depletion of the resource base. This is particularly true for species like *Gnetum* Spp for which harvesting practices are a threat to sustainability (Fondoun and Tiki Manga 2000).

For producers' the issue to consider is whether existing policies affect secured property rights, provide incentives to plant trees and increase their revenues. Again as already mentioned for the case of the GOC, existing policies limit producers/collectors perceived property rights to land, trees and trees products and consequently limit their incentives to cultivate indigenous species. However, since enforcement at the level of producers is weak, a significant majority do not feel the impact of the policy instruments.

Finally for the case of traders, results in chapters seven clearly demonstrate that current policies governing the NTFP/AFTP sector is characterised by high transaction costs and rent seeking government and economic operators. The direct consequence of which may be low producer prices, high consumer prices and low government returns all of which reduce performance in the value chain.

## 9.4 Theoretical and policy implications

Despite the recognised importance of agroforestry in meeting virtually all the Millennium Development Goals, and the acknowledgment of its role to provide environmental services, this thesis and several other agroforestry-related literature in Europe, America, Africa and Asia (Garrett and Buck 1997; Dupraz *et al.* 2004; Roshetko *et al.* 2008; Santos Martin and Van Noordwijk 2011) all point to the fact that agroforestry does not receive adequate policy and institutional support. This study therefore adds to this body of knowledge and recommends an institutional change whereby agroforestry and NTFP/AFTP need to be given due consideration in formal definitions and in legal frameworks governing trees.

Specifically for Cameroon, empirical and theoretical arguments suggest that policy makers need to adapt existing regulations to the current shifts in agricultural and conservation practices, whereby originally wild trees are now planted on farm. Indigenous species are the most discriminated and are the most affected by forestry legislation and thus need more concern.

- *A specific Strategy/program needs to be put in place to develop, guide and implement agroforestry strategies*

To take advantage of the opportunities provided by agroforestry to meet national and international development goals and also to secure the sustainable management of natural resources, appropriate policies, policy instruments, strategies and implementation mechanisms are required. However, such a strategy needs a concerted action between all ministries interested in tree planting. Such a strategy would define clear objectives and targets to meet. The Ministry of Agriculture may have a broader role to play in differentiating general tree planting, afforestation and reforestation programs from ‘agroforestry’, by incorporating elements specific to agriculture and livestock that may be overlooked by other ministries.

- *Distinction should be made between agroforestry products harvested from trees on-farm and non-timber forest products collected from the wild*

In designing legislative instruments to manage NTFP, policy makers should consider that most NTFP with high economic value currently collected from the wild are likely to be planted on farmers’ fields in the near future, thanks to recent advances in tree domestication research. Furthermore, most development projects in the domain of climate change mitigation

and adaptation (REDD and REDD+) most likely will encourage tree planting by farmers. Thus, there is a high need to define and develop criteria to distinguish agricultural and agroforestry products from forestry products and NTFP, while products bounded by specific legislation need to be clearly defined.

Since it is virtually impossible to visually differentiate tree products harvested from the wild from those harvested from farmers' fields, certificates of origin may be useful. While transaction costs in obtaining these certificates may be an issue, we have shown in chapter five that a significant majority of farmers in Cameroon would be ready to abide by certificates of origin if introduced.

- *Efforts should be made to reduce transaction costs related to obtaining land certificates*

Besides security of ownership, agroforestry - like other investment in agriculture - requires land. Competition between trees and other crops for space may push agroforestry to a second choice position. Therefore, the bottleneck may not really be rights to land as is often reported but rather the possibility of obtaining enough land. Customary laws slow down the emergence of land markets, as families are expected to reserve land for their progenies and are not allowed to sell it. Although availability of land may not be limited to agroforestry development alone, it is worthwhile recommending that strategies need to be developed to either encourage land markets or redistribute land to enterprising farmers in another manner.

While some farmers mostly from areas where respect for traditional institutions is still strong and usually represented by lineage may prefer customary rules to guarantee security of tenure, results let us to suppose that a majority of farmers will opt for land title in the middle to near future. This is based on the argument that culture is far from static and continuously evolves under the pressure of a changing environment driven by population growth and modernity (Platteau 1996; Aldashev *et al.* 2012). There is therefore a need for the state to develop appropriate institutions to take over disintegrating customary systems and protect land ownership claims of farmers. One thing to do is to devise institutions to reduce transaction costs in obtaining land titles. Farmers even proposed that obtaining land certificates should be made as simple as obtaining a national identity card.

- *Provide incentive for forestry law compliance*

This study has used empirical findings to show that dispositions in the 1994 law governing the issuing of permits to sell NTFP, has created an atmosphere of illegal activities; rents-seeking government officials and business men; corruption; loss of revenue by the state and a generally poorly functioning NTFP value chain. The theoretical justification of this argument points to policy options or rules that would not only reduce transaction costs in the permit system but also create opportunities that motivate self-compliance or provide incentives to comply with the law. The choice experiment in chapter eight identified major changes through which transaction costs can be reduced in the permit system, there by facilitating compliance.

## **9.5 Limitation of the study and further research**

This thesis has offered an evaluative perspective of the policy and institutional environment governing the NTFP/AFTP value chains in Cameroon. This was done through an assessment of policies and legislation/regulations governing the sector and by sampling and interviewing collectors/producers and traders in the value chains. As a direct consequence of the objectives and methods used, the study has encountered a number of short-comings which need to be addressed in the future.

First, for producers, the study was limited to indigenous species. In this respect, we foremost peruse whether and how the Government of Cameroon includes such species in its poverty reduction and other development strategies with the aim of identifying bottlenecks that may need policy intervention. Having identified institutional gaps as a major obstacle, the study then focused on appraising these gaps. By doing this we addressed one of three agroforestry concerns outlined by Place et al (2012) which is institutions governing private property rights over land and trees. The study however, neglected two other important elements that may have warranted attention when analysing agroforestry policies (policy in this case represent incentives in North's definition of institutions) with a focus on indigenous species. These include:

- (i) *Policies related to tree germplasm multiplication and dissemination.* In this case, it is important to address the way markets for tree germplasm work, how they are regulated and how the technical know-how should be transmitted. Currently as mentioned in chapter four, most on-farm tree planting materials and programs had been concentrated on exotics for which there are well-know propagation and management techniques. This does not exist for most indigenous species even though ICRAF has made efforts to develop such techniques for priority indigenous species.
- (ii) *Policies related to the recognition of agroforestry as an attractive investment area within agricultural organisations and programme.* The perception of stakeholders in different government and international agricultural organisations was not sought. This would have given the opportunity to analyse their knowledge, interests, positions and alliances to agroforestry development. This gap can be filled by subsequent research that seeks solutions to designing an optimal set of rules that would encourage agroforestry development. This even becomes more relevant with the increasing recognition of the contribution of agroforestry to climate change and payment for environmental services. Effective institutional arrangements can provide opportunities to effectively remunerate farmers' efforts to plant trees on-farm.

In chapter four a theoretical framework to show the influence of policy instruments together with other socio-economic, ecological and technical factors on farmers' decision to plant trees was developed, and in chapter five, farmers' decisions to plant trees based on existing regulations and proposed willingness to accept policy instruments such as certificate of origin was assessed. The study however, failed to consider from farmers' perspective which of the factors when addressed will provide the highest expected incentives for them to plant trees. Such information can be relevant to prioritise policy interventions and thus need to be further investigated.

In addition the results of this thesis cannot be considered as an endpoint to the analysis of the effect of agricultural and forestry policies and policy instruments on farmers' on-farm tree planting decisions. One main issue is that most of these policy instruments are weakly enforced. This means that analysis of the assumed relationship between attitudes towards policy instruments and farmers on-farm tree planting intentions need to employ more rigorous

analytical frameworks such as the theory of planned behaviour as elaborated by Fishbein and Ajzen (1975) than as are used in this study.

Specific to chapter six where we investigated farmers' perception and preferences for either land titles or customary systems, an extension of the study may require researching ways of reducing transaction costs and other red tapes in the delivering of permits.

Second, and in relation to traders and specific to chapters seven and eight, the scale of the debate on reducing illegal NTFP trade was limited to reducing transaction costs. Transaction costs may have received wide acceptance in the analysis of institutions, especially in providing a measure of institutional efficiency, as demonstrated in chapter seven. However, the use of transaction costs may mask other issues related to designing efficient institutions to govern demand and supply of permits, such as aligning incentives to motivate self-compliance with the law on permits. An attempt was made in chapter eight to research options that may catalyse self enforcement based on perceived fairness or acceptance of proposed policies or regulations. However the method used was limited in that it did not test the effectiveness and efficiency of proposed solutions. This can be an area for further research.

Another limitation of the study is that we investigated options to reduce transaction costs and other irregularities in the permit system but we did not examine whether by improving the system, vices such as bribery and corruption which characterise the governance of permits will be eliminated. This can be illustrated through the agency relationship between government officials who issue and control permits (*the agent*) and traders who demand and use a permit (*the principal*). The decision to go for a permit depends on the perceived transaction costs to obtain permits and on the good moral of the trader but it affects the welfare of the government official who receives bribes. Consequently, given the agent-principal relationship, different institutions governing permits may influence in an unlike manner the behaviours of actors in the permit system. In this respect, to generate achievable policies and policy instruments that would increase effectiveness and efficiency in the governance of permits in the NTFP sector, there is need for subsequent research to develop corruption models that will predict the behaviour of different actors involved in the demand and supply of permit amongst whom government officials and other rent seekers (economic operators). In other words, it is important to answer the question whether efforts made to reduce TCs in the governance of NTFP permits can be accompanied by the desire of government officials to perform their delegated task without asking for bribes, or whether

they can resist the temptation of rent seekers who may want to offer bribes for reasons we already discussed in this thesis?’

## Summary

The main objective of this study was to assess the policy and institutional environment governing the Non-Timber Forest Products (NTFP) and the Agroforestry Tree Products (AFTP) value chain in Cameroon. To attain the main objectives, specific emphases were put on **NTFP/AFTP collectors/producers'** perceptions, awareness, and attitudes of opportunities and threats posed by existing policies and regulations governing land and trees on their incentives and decisions to plant selected indigenous fruit tree species. The interaction between formal and informal institutions in the management of land and trees by collectors/producers was also specifically studied. Another aim was to find out the effect of such policies and regulation on **traders'** activities, with attention to their decisions to operate in the formal or informal sector and the consequences of their decisions on the performance of the value chains. In the later case, incidences of corruption and rent seeking in the demand and supply of permits to sell NTFP were particularly investigated.

The New Institutional Economics (NIE) was adopted as the main theoretical lens to look at the problem. With reference to the NIE, prominences were put on the economics of property rights and transaction costs in order to make the general assumptions that were necessary to diagnose gaps in existing policies related to agroforestry; explain incidences of corruption and predict the behaviour of producers and traders to respectively plant indigenous species on-farm and to operate in the formal NTFP sector in Cameroon.

The NTFP/AFTP producers who took part in the survey were drawn from a population of farmers involved in the production and sale of three selected indigenous tree products (*Irvingia gabonensis*, *Ricinodendron heudelotii* and *Cola* spp) and originated from villages and regions with different pre-colonial, colonial and cultural backgrounds, which were important to understand the interaction of formal and informal institutions in the management of land and natural resources in Cameroon. Interviewed traders were those who are involved in selling any of the above-mentioned products, in addition to a leafy vegetable *Gnetum* spp. Both producers' and traders' data were collected using separate questionnaires. A choice experiment was included in the traders' questionnaire.



The results of chapter four illustrate the commitment of the government of Cameroon to include elements of Non-Timber Forests Products in its natural resources management and poverty reduction policies and therefore indirectly promote agroforestry. However, the intentions are not materialised by specific programs or strategies. For example, the analysis of policy documents and mission statements of relevant Ministries in charge of Agriculture, Forestry, Environment and other rural development programs indicate that *no specific agroforestry policy or strategy document* exists for Cameroon. The consequence of the latter is the occurrence of numerous afforestation and reforestation programs to address environmental issues which often overlook the important role an agroforestry strategy will play in balancing the interaction between crops, animals and trees on a piece of land, which is actually the essence of agroforestry.

Results of chapter four also point to the fact that forestry legislation governing trees in Cameroon (1994 Forestry Law) designed with the good intentions of conserving natural resources, potentially limits farmers' economic rights to exploit NTFP and *de facto* limits their rights to the trees they plant on their farms. The findings of chapter five show that farmers are generally unaware of the official regulations governing access and trade in the studied species. Even though most of them demonstrated negative attitudes towards the regulations, a significant majority would continue to plant the studied species if the regulations were effectively enforced because indigenous fruits trees form part of their traditional agricultural practices and play a major role in their livelihoods. We however argue that the proportion that would not plant trees because of the regulation (40%) is high enough not to be neglected. Results also show that a significant majority of farmers are ready to accept new policy instruments such as certificate of origin, to distinguish AFTP from NTFP which is a major gap in current legislation and regulations governing indigenous trees in Cameroon.

The concept of tenure security and interactions between formal and informal institutions in the management of land and trees was investigated in chapter six. Specifically, farmers' perception of land ownership and tenure security especially in the context of agroforestry production were assessed. Above all whether and which of the systems: formal, characterised by land titles or customary systems gives farmers more security over their land was investigated. Although all respondents claim individual ownership over farm plots, a majority of them (76%) feel that they are not the real owners of the land. They share the symbolic

views that land is the property of the chiefs, or community and the government. Eighty percent of the sampled farmers would accept land titles to guarantee security over the land for which they claim ownership. Further analysis showed that farmers from communities that had resisted cultural decay were more likely to choose customary institutions to secure their land, compared to those whose traditional values had been comparatively more tempered by modernity and colonisation. Results also show that land availability may be a more limiting factor to agroforestry development than the aspect of tenure security. Farmers' main sources of harvest/collection (at least for the studied fruit species) were from land on which they claim individual ownership and enjoy private property rights, supporting current lobby and advocacy initiatives from national and international NGOs for legislation and regulations to distinguish between NTFP and AFTP.

Analysis of institutional arrangements in the demand and supply of permits in the NTFP sector was analysed in chapter seven. Factors motivating non-compliance are generally related to high transactions costs characterised by a high nominal amount to be paid for the permit; limited access to information and complicated bureaucratic processes at the centre of which are corruption and rent-seeking police and forestry officers and also rich economic operators. The chapter concludes that compliance with the law on permits is a rational choice by traders to overcome high costs. By paying bribes, they make more benefits than what they may gain if they go for permits.

The conditions under which transaction costs could be reduced in the current system of delivering NTFP permits was assessed in chapter eight. The choice model applied to assess policy options revealed that traders would comply with the law on permits under the following conditions: (i) CIGs should be recognised as organisations eligible to obtain permits; (ii) the permit system has to be simplified and decentralised to the regions; (iii) transfers between permit holders should be permitted; and (iv) the duration of the permit should be increased by at least one year. In addition, the study found that simplifying paper work and decentralising the process to the regions was the most valued alternative selected by traders.

The empirical and theoretical arguments of this study suggest that policy makers need to design optimal sets of rules to match existing shifts in agricultural and conservation practices, whereby originally wild indigenous trees are now planted on farm. Within the context of this

study, such rules should be able to encourage certain type of activities specifically the adoption of agroforestry practices and forestry law compliance.

## Samenvatting

Het doel van deze studie was het beoordelen van de beleids- en institutionele omgeving m.b.t. de waardeketens voor bosproducten anders dan hout uit natuurlijke bossen (NTFP) en gecombineerde land- en bosbouw (AFTP) in Kameroen. Om tot dit doel te komen werd de nadruk gelegd op het bewustzijn en de percepties van verzamelaars/producenten van dit type producten ten opzichte van de kansen en risico's die gecreëerd worden door het bestaande beleid en wetgeving op het gebied van land en bos en hoe dit hun drijfveren en beslissingen om bepaalde inheemse fruitbomen te planten beïnvloedt. Daarnaast werd de interactie tussen formele en informele instituties in het beheer van land en bos onderzocht. Een tweede doel was om het effect van dit beleid op de activiteiten van handelaren te bestuderen, met een nadruk op hun voorkeur voor het opereren in de formele of informele sector en het gevolg hiervan op het functioneren van de waardeketens als geheel. Voor handelaren in de informele sector werd gekeken naar het voorkomen van corruptie in de markt voor verkoopvergunningen voor NTFP.

New Institutional Economics (NIE) werd gebruikt als de theoretische lens om het probleem te bestuderen. Dit houdt in dat de nadruk op eigendomsrechten en transactiekosten ligt voor het diagnosticeren van tekortkomingen in het bestaande beleid op het gebied van gecombineerde land- en bosbouw, het voorkomen van corruptie en het voorspellen van gedrag van producenten aangaande het planten van inheemse soorten en van handelaren aangaande de beslissing om in de formele NTFP sector in Kameroen te opereren.

Producenten die deelnamen aan het onderzoek kwamen uit een populatie die actief bezig waren met het verzamelen en het vermarkten van drie inheemse bosproducten (*Irvingia gabonensis*, *Ricinodendron heudelotii* en *Cola* spp) en afkomstig zijn uit dorpen en regio's met verschillende pre-koloniale, koloniale en culturele achtergronden die relevant zijn om de interactie te begrijpen tussen formele en informele instituties. Geïnterviewde handelaren waren actief in het aan- of verkopen van dezelfde producten en een groente genaamd *Gnetum* spp. Producenten en handelaren kregen verschillende questionnaires. De questionnaire voor handelaren bevatte tevens een 'choice experiment'.

De resultaten uit hoofdstuk vier laten de betrokkenheid zien van de Kameroense overheid om expliciet rekening te houden met NTFP in het beleid rond het beheer van natuurlijke hulpbronnen en het terugdringen van armoede, waardoor gecombineerde land- en bosbouw indirect gestimuleerd wordt. Deze intenties zijn echter nog niet omgezet in specifieke programma's of activiteiten. Een analyse van beleidsdocumenten en missieverklaringen van het Ministerie van Landbouw, Bosbouw en Natuur alsook andere rurale ontwikkelingsprogramma's tonen aan dat er *geen specifiek beleids- of strategiedocument op het gebied van gecombineerde land- en bosbouw* bestaat voor Kameroen. Een direct gevolg van deze tekortkoming is een verscheidenheid aan bebossings- en herbebossingsprogramma's die natuurbescherming als doel hebben maar geen rekening houden met het belang van een coherente strategie die rekening houdt met de interactie tussen gewassen, dieren en bomen: de essentie van gecombineerde land- en bosbouw.

Resultaten uit hoofdstuk vier wijzen er ook op dat de bosbouw wetgeving in Kameroen (1994 Forestry Law) die ontworpen is met de goede intentie om natuurlijke hulpbronnen te beschermen, de mogelijkheden van boeren om NTFP te benutten beperkt en daarmee *de facto* hun rechten tot het benutten van bomen die ze planten op eigen grond. De resultaten uit hoofdstuk vijf laten zien dat boeren zich over het algemeen niet bewust zijn van de wetgeving aangaande toegang tot en handel in de bestudeerde soorten. Hoewel de meeste boeren negatief staan tegenover de wetgeving, zou een groot deel van hen onverminderd doorgaan met het aanplanten van de bestudeerde soorten als de wetgeving zou worden gehandhaafd, omdat inheemse fruitsoorten een onderdeel vormen van traditionele landbouwmethoden en een belangrijke rol spelen in hun levensonderhoud. Ik beargumenteer echter dat het aandeel dat zou ophouden met het aanplanten van bomen (40%) zodanig groot is dat het niet genegeerd mag worden. De resultaten laten tevens zien dat een aanzienlijk deel van de boeren bereid zouden zijn nieuwe beleidsinstrumenten zoals certificaten van oorsprong, die onderscheid maken tussen AFTP en NTFP, te accepteren. Het ontbreken van dergelijke certificaten is een ernstige tekortkoming in de huidige wetgeving.

In hoofdstuk zes wordt gekeken naar het concept van rechtszekerheid en interacties tussen formele en informele instituties in het beheer van land en bos. Meer specifiek wordt gekeken naar de perceptie die boeren hebben van eigendomsrechten in de context van gecombineerde land- en bosbouw productie. Het belangrijkste aspect hierbij is welk systeem – formeel, gekenmerkt door landeigendomsrechten of informeel via gewoonterechten – boeren meer

zekerheid geeft over hun landbezit. Alhoewel alle respondenten beweren dat het land in hun bezit is, geeft een meerderheid aan (76%) dat ze niet de werkelijke eigenaar van het land zijn. Ze delen de mening dat land eigendom is van stamhoofden, de gemeenschap of de overheid. Tachtig procent zou officiële landeigendomsrechten accepteren om zeker te zijn van toegang tot hun land. Een diepgaandere analyse toont aan dat boeren uit gemeenschappen die zich verzetten tegen culturele teloorgang vaker het gewoonterecht verkiezen om zich te verzekeren van landtoegang, in vergelijking met boeren wiens traditionele waarden meer beïnvloed zijn door moderniteit en kolonisatie. De resultaten tonen tevens aan dat de beschikbaarheid van land een grotere beperking vormt voor gecombineerde land- en bosbouw dan het gebrek aan landeigendomsrechten. Het gros van de productie (ten minste van de bestudeerde soorten) komt van land waarvoor producenten individuele landeigendomsrechten bezitten, wat huidige lobby- en voorspraakinitiatieven van nationale en internationale NGO's om een onderscheid tussen NTFP en AFTP in regulering en wetgeving ondersteunt.

Hoofdstuk zeven bevat een analyse van de institutionele regelingen in vraag en aanbod van vergunningen in de NTFP sector. Factoren die naleving beperken zijn over het algemeen gerelateerd aan hoge transactiekosten in de vorm van dure vergunningen, beperkte toegang tot informatie en ingewikkelde bureaucratische processen veroorzaakt door corrupte politie, bosbouw officieren en welgestelde ondernemers. De conclusie van dit hoofdstuk is dat naleving van de wet door te werken met vergunningen een rationele beslissing is van handelaren om hoge kosten te vermijden. Het betalen van steekpenningen is winstgevender dan werken met vergunningen.

In hoofdstuk acht worden de voorwaarden waaronder transactiekosten verminderd kunnen worden in het huidige verstrekkingssysteem van vergunningen bestudeerd. Het keuzemodel toegepast op beleidsopties toont aan dat handelaren zich aan de vergunningswet zouden houden als (i) Common Initiative Groups (CIGS) erkend worden als vergunningsgerechtigde organisaties; (ii) het vergunningensysteem versimpeld en gedecentraliseerd zou worden; (iii) overdrachten tussen vergunninghouders toegestaan zouden zijn; (iv) de geldigheidsduur van vergunningen verlengd zou worden met ten minste een jaar; en (v) een lagere regeneratie belasting van toepassing zou zijn. Het verminderen van bureaucratie en decentralisatie wordt als het belangrijkste ervaren door handelaren.

De empirische en theoretische argumenten in deze studie suggereren dat beleidsmakers optimale regels dienen te ontwerpen die rekening houden met bestaande verschuivingen in landbouw- en natuurbehoudsmethoden, waarbij van origine wilde inheemse soorten nu geplant worden. In de context van deze studie, zouden dergelijke regels bepaalde activiteiten aanmoedigen, in het bijzonder aangaande adoptie van gecombineerde land- en bosbouwmethoden en naleving van bosbouwwetgeving.

## Curriculum Vitae

Divine Foundjem Tita was born on the 30<sup>th</sup> of March 1973 in Mankon-Mezam in the Northwest region of Cameroon. He attended primary school from 1979 -1986 at Catholic school Azire, Small Mankon and also at Catholic School Ngomgham. From 1986 – 1991, he attended Government Bilingual High School (GBHS) Bamenda and obtained the General Certificate of Education (GCE) ordinary level in 1991 in 10 subjects. He moved to the Cameroon College of Arts Science CCAS Kumba, where he obtained the GCE advanced level in four subjects. He enrolled into the University of Buea in 1994 and studied Physics for two years. In 1995, he passed the competitive entrance exams into to the Faculty of Agronomy and Agricultural Sciences of the University of Dschang-Cameroon where he received training as an *ingénieure agronome* for five years (socio-economics) and obtained his diploma in the magic year 2000.

He started his professional career in 2001 at the Fritz Jakob Foundation as a volunteer where he assisted the team in linking women involved in the commercialization of foodstuffs in the Ngoulemakog sub-division to major markets in Ebolowa, Yaounde and Doula. Between April 2001 and March 2003, he rendered consultancy services on value chains of food crops for the International Institute of Tropical agriculture (IITA) and the French research institute CIRAD. He joined the World Agroforestry Centre (ICRAF) in March 2003, where he worked as a research assistant in charge of marketing and farmer enterprise development. While working for ICAFR, he obtained an Erasmus Mundus Scholarship in September 2007 to read an International Master of Science in Rural Development (IMRD) specialising in agricultural economics at the University of Ghent, Belgium. He graduated in 2009 and started a PhD in October of the same year. His current areas of research are in natural resources management, agroforestry, NTFP value chain analysis, institutions and economics of legislation and compliance with the law applied to the forestry sector. His theoretical interests are in the fields of the New Institutional Economics, transaction costs economics and natural resources economics and also value chains. Divine has authored and co-authored in international peer reviewed journals in his fields of interest as shown below.



## Scientific Publications

### Article in peer reviewed international journals included in the science citation index (A1)

**Foundjem-Tita, D.**, S. Speelman, J. C. Tieguhong, O. Ndoeye, M. D’Haese, Z. Tchoundjeu, G. van Huylenbroeck, P. van Damme ( 2013). A choice experiment approach for assessing incentives to forest law compliance: case of NTFP traders in Cameroon. *International Forestry Review* (in press).

**Foundjem-Tita, D.**, Tchoundjeu , Z., Speelman, S., D’Haese, M., Degrande, A., Asaah, A., van Huylenbroeck, G., van Damme, P. Ndoeye, O. 2012. Policy and Legal Frameworks Governing Trees: Incentives or Disincentives for Smallholder Tree Planting Decisions in Cameroon? *Small Scale Forestry*. Accepted Nov. 2012

**Foundjem-Tita D.**, D’Haese M., Degrande A., Tchoundjeu Z. & Van Damme P. (2011) Farmers’ satisfaction with group market arrangements as a measure of group market performance: A transaction cost analysis of Non Timber Forest Products’ Producer Groups in Cameroon. *Forest policy and economics* Vol 13 (7): 545-553.

**Foundjem-Tita D.**, Van Damme P., Degrande A., D’haese M., Tchoundjeu Z. (2010): Institutional arrangements are a driving force for NTFP as a livelihoods option: Case study of ADEAC Cameroon. Paper presented at the XXIII IUFRO World congress, 23-28 August 2010. Republic of South Korea.: *International forestry review* Vol. 12 (5) Abstract.

Ambe Timah E., Nji Ajaga, **Tita D. F.** Ntonga L.M. (2008). Demographic pressure and Natural resources conservation. *Ecological Economcs* Vol. 64 (3).

Dury S, Medou J.C., **Tita D**, Nolte C. (2004). Limites du système local d’approvisionnement alimentaire urbain en Afrique subsaharienne : le cas des Féculents au Sud–Cameroun. *Cahiers D’Agricultures*; 13:116-24.

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**Foundjem-Tita D.** Degrande A., D'Haese M., Van Damme P., Tchoundjeu Z, Gyau A. Facheux C.' Mbosso C. (2012). Building long-term relationships between producers and trader groups in the Non Timber Forest Product sector in Cameroon. African journal of agricultural research Vol 7 (2) :230-239.

Amos Gyau, Zac Tchoundjeu, **Divine Foundjem-Tita**, Ebenezer Asaah, Charlie Mbosso and Steven Franzel, 2011. Antecedents and Effects of Group Sales on Supply Chain Performance: The Case of Kola Production and Marketing in Cameroon. Journal of Development and Agricultural Economics Vol. 3(13), pp. 621-626.

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Facheux, C ; Tchoundjeu Z ; **Foundjem-Tita D.** Degrande A. Mbosso C. (2007). Optimizing the production and marketing of NTFP. African crop Science Proceedings Vol. 8 PP 1249-1254

## Book chapters

Degrande A, **Foundjem-Tita D**, Mbosso C and Nimino G. Augmenter les bénéfices générés des PFNL par les producteurs à travers l'entrepreneuriat paysan : Cas du Ricinodendron heudelotii (njansang) dans la région du Centre Cameroun. *Chapter in FAO book « Vivre et se nourrir de la forêt » in press.*

Van Huylenbroeck G. D'Haese M., **Tita D.F.** (2010). Understanding institutional arrangements for improved market access in Africa: how to explain seemingly irrational causes of success and failure In Van Trijp, Ingenbleek P. (Eds) Markets, marketing and developing countries: where we stand and where we are heading. Wageningen Academic publishers .

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### **Other unpublished scientific works and reports**

**Foundjem Tita D.** A transaction cost analysis of factors affecting market arrangements *in the agroforestry tree product value chain in Cameroon*. MSc dissertation, Ghent University – Belgium. September, 2009

**Foundjem Tita D.** (2003) Method for the Quantification and spatialisation of urban supply flows: The case of fresh cassava roots in Yaounde. 'Rapport 2003. Projet SIUPA'. Yaounde : Cirad ; IITA, ; 67 p.

Robiglio V, Isseri, **Foundjem Tita D**, Dury S. (2003) Approvisionnement de Yaoundé en Racines fraîches de manioc: Spatialisation des flux. Poster présenté à la conférence Food Africa. Yaoundé (Cameroon): National Ressources Institut; Institutes de recherches médicinales et d'études des plantes médicinales (IMPM) ; International Foundation for sciences (IFS).

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Foudjem-Tita D., Van Damme P., Degarnde A., Tchoundjeu Z, D'Haese M, (2010). Institutional arrangements are a driving force for NTFP as a livelihoods options case of ADEAC Cameroon. Paper presented at the XXIII IUFRO world Congress "Forests for the future: sustaining society and the environment" Seoul Korea, 23-28 August 2010. (Oral presentation)

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